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THE VALUE OF THE XANTHINE DIURETICS IN CONGESTIVE HEART FAILURE *

H. M. MARVIN, M.D.

NEW HAVEN, CONN.

The so-called xanthine (or caffeine) group of drugs is generally regarded[1] as consisting of caffeine, theobromine and theophylline. Caffeine has long been considered practically useless, so far as its diuretic action in human beings is concerned, and the term "xanthine diuretic" is therefore restricted to theobromine and theophylline, both of which are frequently employed in combination with other substances. Of these combinations, theobromine sodiosalicylate (diuretin) is probably the best known and the most widely employed at the present time. Theophylline, as Christian[2] has sagely remarked, "is in the pharmacopeia but not in the pharmacy"; the cost of its commercial production from tea is so great that the synthetic preparation, theocin, is the only one available for clinical use.

Although these drugs have been in use for a long period of years, there is a surprising lack of clinical studies on which their intelligent employment in cardiac patients may be based. The literature of the last two decades abounds in studies of the effects of diuretics on normal animals, and in observations on their action on various portions of the renal parenchyma, the blood vessels, the blood pressure, the salts and the nitrogenous substances of the blood and urine. One seeks in vain, however, a satisfactory study of any considerable group of patients which will afford a basis for critical appraisal of the clinical value of theobromine and theophylline. Statements of opinion are numerous; the observations on which they rest are almost never reported. In the early days of the present century, Minkowski[3] obtained good results from theophylline in a majority of fourteen patients, most of whom were suffering from heart failure. Details of three cases were given, with charts showing excellent diuresis. Several years later, Alkan and Arnheim[4] reported eight cases, in which seven patients had heart failure; excellent diuresis resulted from the use of theophylline and theophylline sodio-acetate. Many years later Christian[5] made a careful study of the effect of theophylline in a small group of patients with cardiorenal disease; he concluded that "in cardiorenal cases with marked edema, theocin is of therapeutic value because it produces, especially in conjunction with digitalis, an active diuresis."

Reference to current textbooks on heart disease and its treatment reveals varying degrees of optimism and pessimism concerning the therapeutic value of the xanthine diuretics. The late Sir James Mackenzie,[6] in his discussion of the treatment of heart failure in one of the modern systems of medicine, makes no mention of them. In his textbook,[7] he dismisses them with a single sentence: "When these drugs [the combination of digitalis, squills and calomel] fail, others may be found to act, such as theobromine sodium salicylate or theocin sodium acetate." Lambert[8] apparently does not feel that they are of great value; he says: "Theobromine and theophylline are often recommended as diuretics. . . . With active kidneys and but little renal change, they sometimes act well, especially if in accompaniment with digitalis therapy; in the majority of patients, however, they fail to act unless digitalis is given." From the recent textbooks of Smith[9] and of Cowan and Ritchie[10] the xanthine diuretics have been entirely omitted, and Neuhof[11] restricts his discussion to the one of them which is probably of least value; theobromine sodiosalicylate. Vaquez,[12] in his recent comprehensive book, devotes only one short sentence to these drugs: "Theocin often acts as a powerful diuretic." Reid[13] is a little more optimistic; he states that "digitalis itself is a diuretic in cases in which edema is associated with heart failure. But certain drugs of the caffeine-theobromine group are even more effective for this purpose." And Eggleston[14] has apparently summed up the feeling of many when he writes: "These diuretics are of little value, even in the presence of marked edema, except in such cardiac patients as have relatively little organic renal damage. It is in just such cases, however, that full digitalization is accompanied by the most marked diuresis, so that the need for the xanthine diuretics does not frequently arise." Some-

* From the Department of Internal Medicine, Yale University School of Medicine, and the Medical Service of the New Haven Hospital.

1. Cushny, A. R.: A Textbook of Pharmacology and Therapeutics, Philadelphia, Lea & Febiger, 1918. Sollmann, Torald: A Manual of Pharmacology, Philadelphia, W. B. Saunders Company, 1922.
2. Christian, H. A.: Treatment of Chronic Myocarditis and Chronic Valvular Disease of the Heart, in Billings-Forchheimer's Therapeusis of Internal Diseases, New York and London, D. Appleton & Company 1: 254, 1924.
3. Minkowski, O.: Ueber Theocin als Diuretikum, Therap. d. Gegenw. 4: 490, 1902.
4. Alkan, L., and Arnheim, J.: Erfahrungen über Theocin, Therap. Monatsh. 18: 20, 1904.
5. Christian, H. A.: Some Studies of a Diuretic, Arch. Int. Med. 18: 606 (Nov.) 1916.
6. Mackenzie, James, in Oxford Medicine, New York, Oxford University Press, 1920.
7. Mackenzie, James: Diseases of the Heart, London, Oxford University Press, 1918, p. 312.
8. Lambert, Alexander: Chapter on Myocarditis, in Tice's Practice of Medicine, New York, W. F. Prior Company 6: 369, 1920.
9. Smith, S. C.: Heart Affections, Their Recognition and Treatment, Philadelphia, F. A. Davis Company, 1922.
10. Cowan and Ritchie: Diseases of the Heart, London, Edward Arnold & Company, 1922.
11. Neuhof, S.: The Heart, Philadelphia, P. Blakiston's Son & Company, 1923.
12. Vaquez, H.: Diseases of the Heart (trans. by Laidlaw), Philadelphia, W. B. Saunders Company, 1924, p. 692.
13. Reid, W. D.: The Heart in Modern Practice, Philadelphia, J. B. Lippincott Company, 1923, p. 268.
14. Eggleston, Cary: Drug Therapy in Chronic Heart Disease, in Nelson's Loose-Leaf Living Medicine, New York, Thomas Nelson and Sons 4: 494.

what the same feeling is expressed by Christian [2] in his latest discussion of these drugs, with which he has had a long experience: "For the great majority of cardiacs with edema, digitalis is a wonderful diuretic and all that is needed. Occasionally it needs to be helped. Theophylline is the most active of the diuretics for such a patient."

These few brief quotations will serve to indicate that there is fairly general agreement on two points: that the xanthine diuretics may occasionally prove beneficial, and that theophylline is the most potent member of the group. There is no apparent agreement as to the frequency with which the necessity for their administration arises, and there are no reports that indicate the percentage of successful results one may expect from their use. The present study was undertaken with the hope of providing a partial answer to the questions: How often, in a series of cardiac patients, are diuretics necessary, and how frequently do they prove effective after digitalis alone has failed?

METHOD OF STUDY

The patients who form the basis of this report were adults with advanced congestive heart failure characterized by large amounts of subcutaneous edema. Many of them had, in addition, hydrothorax or ascites or both, but no patient was studied who did not have extensive subcutaneous edema. Without exception, these persons were under observation for periods of at least three weeks; more than 90 per cent of them were studied for more than six weeks. Patients with evidence of nephritis, as well as those in whom death occurred within ten days of the beginning of active treatment, have been excluded. There was evidence of arteriosclerotic renal injury in a few persons, as will be pointed out later.

The great majority of these patients were kept at complete rest in bed, with restriction of the fluid intake, for periods of from six to twenty-two days, in order that control observations on the heart rate, body weight and urinary volume might be obtained. (A few were in such desperate condition at the time of admission that medication was started at once; the omission of the rest period, however, is of no significance from the standpoint of the present study). Each patient was then completely digitalized, the dosage being calculated on the basis of 1.5 Gm. of the powdered leaf per hundred pounds of body weight after due allowance for the edema. The total required amount was administered almost always within a period of from twenty-four to forty-eight hours. In those patients with auricular fibrillation, the reduction of the apex rate to or slightly below 70 a minute was accepted as the most satisfactory criterion of dosage; in those with regular rhythm, the full calculated dose was administered unless toxic symptoms made their appearance before the last fraction had been given. Electrocardiograms were secured in all cases after digitalization; with a single exception, they exhibited the changes regarded as characteristic of digitalis action. The effect of digitalis on the heart was maintained by a small daily dose, the average being 0.2 Gm. a day for five consecutive days of each week.

Rest in bed was enforced throughout the period of observation. The daily fluid intake was restricted to 1,200 cc., or as near that level as possible, and the daily volume of urine measured. The body weight was determined every day or every second day, unless the condition of the patient was such as to render the procedure harmful. In only four patients of the entire group were weights determined as infrequently as every four days. Those with extreme heart failure were sometimes placed on the Karrell diet for several days after admission to the hospital; otherwise no special diets were employed.

If the edema diminished as a result of digitalis therapy, the drug was continued for a number of days to determine whether it would prove entirely satisfactory. If, however, all or part of the edema remained after digitalis had been given for a considerable period, one of the xanthine diuretics was given, and repeated if necessary after an interval of four or five days. If the first diuretic proved ineffective, it was usually repeated at least once before being discarded as useless. Some patients received all the drugs with no response to any of them; in such individuals, subsequent attempts to provoke diuresis were conducted with theophylline alone, as it was considered the most potent of the group.

Three drugs were employed. Theobromine sodiosalicylate was given in doses of from 2.6 to 5.3 Gm. (40 to 80 grains) daily for five or six consecutive days, and was then omitted for at least a week before being repeated. Most of the patients who received this preparation were given 4 Gm. (60 grains) daily; only two received the larger doses. Theobromine was administered in gelatin capsules by mouth in doses of 0.6 Gm. (10 grains) three times daily for two consecutive days. Theophylline, in the form of synthetic theophylline (theocin), was employed in a dosage of 0.3 Gm. (5 grains) three times daily for two consecutive days.

Seventy-seven patients have been studied in the manner indicated above; twenty-seven with rheumatic heart disease, and fifty with arteriosclerotic or hypertensive heart disease. In the present study, no attempt has been made to distinguish between these last two groups because it is frequently difficult, and sometimes impossible, to determine whether the heart failure in a given individual is the result of arteriosclerosis of the coronary vessels, of long-standing hypertension, or of a combination of the two. This group of fifty patients will be referred to as the arteriosclerotic-hypertensive group, but it should be indicated that seventeen of them, or almost exactly one third, had persistent hypertension, while the remaining thirty-three had no elevation of the blood pressure, either systolic or diastolic.

A special word should be added regarding the observations on renal function in the members of the arteriosclerotic-hypertensive group. Albumin and casts were regularly found in the urine at the time of their admission to the hospital and were thought to be due, in part, to renal congestion. In many of them the blood nonprotein nitrogen was abnormally high, and the excretion of phenolsulphonphthalein after its intramuscular injection was greatly reduced. If treatment proved effective, the albumin and casts often disappeared, and the nonprotein nitrogen and phenolsulphonphthalein excretion became normal. In forty-four of the fifty patients in the group under discussion, the nonprotein nitrogen was less than 40 mg. per hundred cubic centimeters of blood, and the excretion of phenolsulphonphthalein in two hours and ten minutes was above 50 per cent. In the remaining six, the nonprotein nitrogen varied from 41 to 57 mg., and the phenolsulphonphthalein excretion from 37 to 50 per cent. In none of the fifty was there satisfactory evidence that the renal condition was responsible for

the production of symptoms or for a failure to respond to treatment.

RESULTS

Of the entire group of seventy-seven patients, thirty-six (47 per cent) were rendered edema-free by digitalis. Of the forty-one remaining patients, thirteen were completely relieved of their edema by xanthine diuretics, five others had well marked diuresis but did not become completely edema-free, and five more showed moderate diuresis with loss of some edema. In these twenty-three, digitalis and rest had failed to cause a reduction in the edema. The results in the two groups are indicated graphically in chart 1.

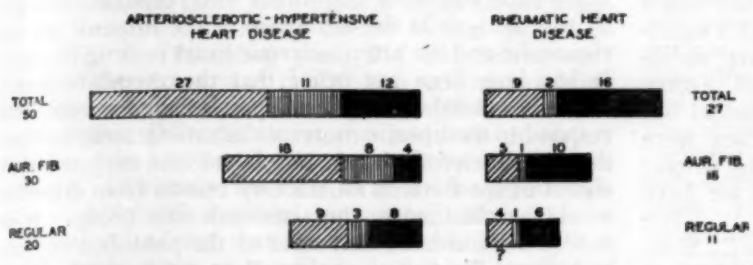

Chart 1.—The effect of digitalis and xanthine diuretics on edema in seventy-seven patients with congestive heart failure. The total number in each group is shown in the upper column; the lower columns indicate the number with auricular fibrillation and regular rhythm, respectively. The portions of the columns in diagonal lines represent the number of patients who were made edema-free by digitalis alone, and the portions in vertical lines the number made edema-free by diuretics. The black sections indicate the number who remained edematous after digitalis and diuretics. The question mark beneath the lowest column on the right indicates that the improvement in those four patients was probably not due solely to digitalis. Eleven of twenty-three patients in the first group were benefited by diuretics, but only two of eighteen in the second group.

It will be noted that thirteen of forty-one patients were made edema-free by diuretics, and eleven of the thirteen are in the arteriosclerotic-hypertensive group. Of the twenty-three patients in that group who remained edematous after digitalis, eleven, or nearly 50 per cent, responded satisfactorily to one or more of the diuretic drugs employed. In sharp contrast, it is to be observed that only two of eighteen patients with rheumatic heart disease gave a similar response.

Differences in the results obtained with the different members of the xanthine group may be indicated briefly. Theobromine sodiosalicylate was administered to eight patients, and in only two of them did it yield satisfactory results. In the other six it failed completely or partially, even though given in very large doses; theobromine or theophylline subsequently caused the complete disappearance of edema in five of the six. In no instance did theobromine sodiosalicylate cause unpleasant symptoms or give evidence of any undesirable side-actions. Theobromine was used in seventeen patients, many of them receiving it repeatedly. In four cases it caused satisfactory diuresis and complete disappearance of edema; in three others there was diuresis, but insufficient to remove all of the edema, and in the remaining ten there was no result, even when the usual dosage was increased. In only one of the seventeen patients did theobromine cause undesirable symptoms: in that one, it was invariably followed by headache and nausea. Theophylline was given to thirty-four patients: twelve were entirely relieved of their edema, eleven others had moderate diuresis, with incomplete removal of edema, and eleven showed no response whatever. Unlike the other preparations, theophylline caused undesirable symptoms in the vast majority of those who received it; not infrequently the drug had to be discontinued before the total desired amount had been given because of the appearance of distressing symptoms which could not be ignored. The most frequent complaints were of epigastric burning or pain, nausea, vomiting, dizziness, blurring of vision, and headache. Headache, nausea and vomiting were observed almost uniformly after the administration of full doses.

Attention should be called to the fact that although the total number of patients made edema-free by diuretics was stated as thirteen, the numbers given in the foregoing paragraph total eighteen. The apparent discrepancy is explained by the fact that five persons who responded satisfactorily to theobromine or theobromine sodiosalicylate subsequently reaccumulated their edema and were treated with theophylline, which gave equally satisfactory results.

There were many opportunities for repeating diuretics that had been given once without result. The repetition was found valueless; in no instance was there a response to subsequent courses of a drug that had proved useless at its first exhibition. Not infrequently, however, patients who had shown no diuresis after theobromine sodiosalicylate reacted most satisfactorily to theophylline. If the customary doses of these drugs were found ineffective, they were often repeated in larger amounts: 5.3 Gm. of theobromine sodiosalicylate daily, 3 Gm. of theobromine daily, and 2 Gm. of theophylline daily being the usual maximal doses. In no patient of the present series did increased dosage cause diuresis after the customary doses had failed, and the larger amounts of theophylline invariably provoked severe vomiting, which sometimes persisted for several days. It was sometimes necessary to administer an effective diuretic five or six times to cause the complete disappearance of edema; with a single exception, the diuretic response to the first course of the drug was the greatest. This was probably due, in part

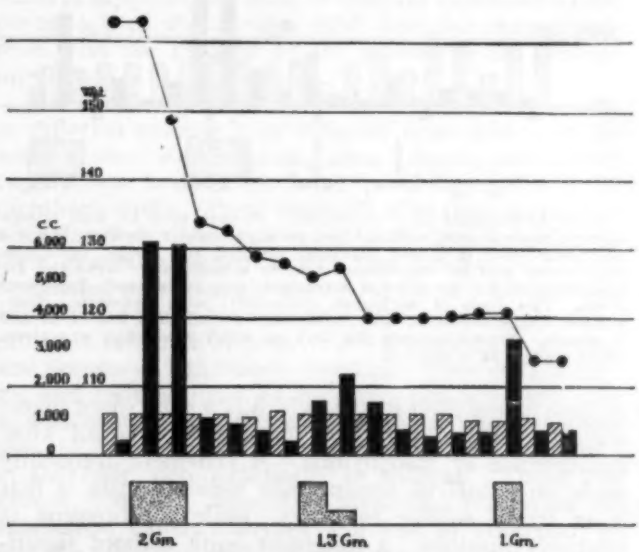

Chart 2.—Complete chart not shown. Woman, aged 62, with arteriosclerotic-hypertensive heart disease and auricular fibrillation. Blood pressure 230 systolic, 120 diastolic. Complete digitalization and rest for eight days caused no diminution in the extensive edema. Theophylline was given three times and caused great diuresis, with loss of 30, 8 and 7½ pounds, respectively. The fluid intake is indicated by cross-hatched columns, the urinary volume by solid columns, weight in pounds by dots, and theophylline by stippled rectangles. The desired amount of theophylline could not be given at its second and third administration because of nausea and vomiting. Digitalis given only in maintenance doses: an average of 1 Gm. per week.

at least, to the fact that there was a larger amount of edema fluid available for removal at the beginning of treatment.

COMMENT

With regard to the relative potency of the three drugs studied, the results in the present group of patients appear to be similar to those obtained by other observers. The superiority of theophylline is too apparent to require extended comment. The distressing nausea and vomiting that so often attend its use lessen the enthusiasm one might otherwise feel for this excellent preparation. In favor of theobromine sodiosalicylate there is apparently little to be said, except that it is tolerated in huge doses. It was pointed out many years ago by Taylor[15] that large doses were necessary to insure satisfactory results. He writes: "The dosage of theobromine sodiosalicylate we have found to play an important part in its action. . . . We regard 80 grains a day as a normal clinical dose." Even with such doses, however, Taylor's charts indicate that the urinary volume averaged only about twice the

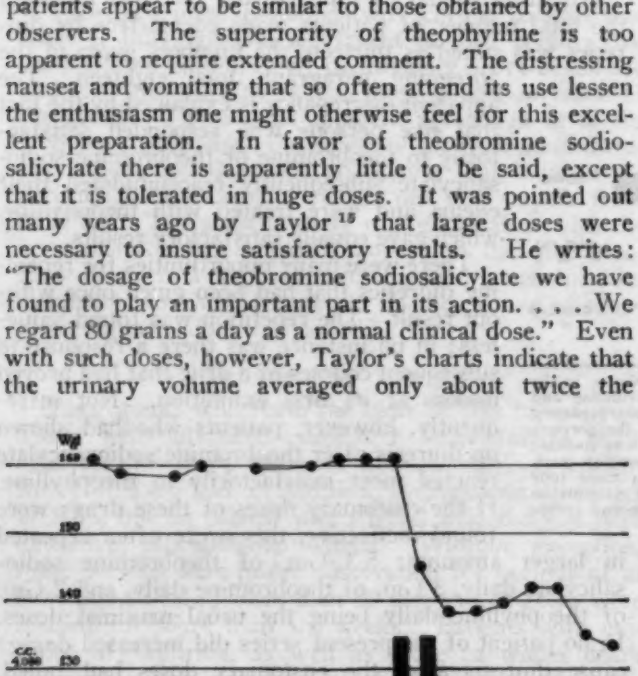

Chart 3.—Complete chart not shown. Woman, aged 53, with arteriosclerotic heart disease, normal blood pressure, regular rhythm. Digitalis was given until it caused headache, vomiting and ectopic ventricular tachycardia, with no improvement then or subsequently. After the disappearance of the symptoms of overdosage, only maintenance doses were given. Two doses of merbaphen (novasurol) were ineffective. Theophylline was given twice, with satisfactory diuresis and loss of 23 and 8 pounds. Arrows indicate the days on which merbaphen was given. Other symbols as in chart 2.

volume of the fluid intake, which is a very slight diuresis as compared with that frequently obtained after theobromine or theophylline. A statement frequently made on behalf of theobromine sodiosalicylate is that it is freely soluble in water, while theobromine is relatively insoluble: a statement quite without significance in view of the fact that the increased solubility decreases its diuretic potency.

Theobromine appears to be used but seldom, although our results indicate that it is far more valuable than its more soluble relative theobromine sodiosalicylate. It not infrequently causes diuresis when the latter preparation has completely failed, and it is equally free from undesirable side-actions. That absence of water solubility is of no importance whatever is indicated by the fact that theophylline, the most potent of the xanthine diuretics, is equally insoluble.

The number of persons in the group studied is too small to make it of statistical value, but the results do not lend great support to the attitude of those who hold that the diuretics are almost worthless. Of forty-one patients who remained edematous after digitalis therapy, thirteen were made edema-free by diuretics, five others lost most of their edema and were greatly relieved, and five more had moderate diuresis with loss of some edema and definite alleviation of symptoms. In only eighteen patients were these drugs entirely devoid of diuretic action.

Perhaps the most significant fact brought to light by this analysis is the difference in the response of the rheumatic and the arteriosclerotic heart to drug therapy. It has long been my belief that the rheumatic heart which has failed to the point of persistent edema does not respond to therapeutic measures as satisfactorily as does the arteriosclerotic heart, but I had not expected that eleven of the thirteen satisfactory results from diuretics would be obtained in the arteriosclerotic group. It is hardly a coincidence that most of the published reports and charts illustrating the excellent results of diuretics in cardiac patients represent instances of arteriosclerotic or hypertensive heart disease rather than rheumatic or syphilitic heart disease. The importance of the etiology of heart disease in determining the response to treatment will be emphasized more adequately elsewhere; it is desired at this time merely to call attention to the conspicuous difference in the two groups treated with diuretics.

SUMMARY AND CONCLUSIONS

A group of seventy-seven adult patients with advanced congestive heart failure were treated with digitalis and diuretics of the xanthine group: theophylline, theobromine, and theobromine sodiosalicylate.

Thirty-six were made edema-free by digitalis alone. Of the remaining forty-one, thirteen were entirely relieved of edema by one or more of the diuretics employed, five others had well marked diuresis with loss of most of the edema and five more were moderately benefited.

Theobromine sodiosalicylate in doses of from 2.6 to 5.3 Gm. daily for five or six consecutive days was effective in only two of eight patients, although five of the remaining six responded satisfactorily to theobromine or theophylline. It was regarded as of very little value.

Theobromine in doses of 0.6 Gm. three times a day for two days was partially or entirely satisfactory in seven of seventeen patients. Of the remaining ten, one half later obtained excellent diuresis from theophylline. Theobromine was a far more effective diuretic than was theobromine sodiosalicylate and was equally devoid of undesirable side-actions.

Theophylline was far the most potent diuretic of the three preparations. It proved effective in a number of persons who had failed to show diuresis after the administration of the other two drugs. Its therapeutic usefulness was somewhat limited by the nausea and vomiting that followed its use.

There seems to be no sound basis for the attitude assumed by many that diuretics are worthless. A certain proportion of cardiac patients can be relieved of symptoms by these drugs after adequate treatment with digitalis has completely failed.

There is evidence to indicate that the xanthine diuretics are most effective in the arteriosclerotic-hypertensive heart disease group, as contrasted with the rheumatic heart disease group.

15. Taylor, Lester: Clinical Studies in Caffeine, Arch. Int. Med. 14:769 (Dec.) 1914.

TOLERANCE TO DIGITALIS IN EXPERIMENTAL DIPHTHERIA *

HARRY GOLD, M.D.
NEW YORK

McCullough,[1] in 1921, observed that the disorders of cardiac rhythm arising in patients with diphtheria were similar to those produced by large doses of digitalis. He deduced, therefore, that digitalis might simply exaggerate disturbances already caused by the diphtheria toxin. In the following year, Bie and Schwensen [2] reported the recovery of one of two patients receiving full doses of digitalis. These patients had a form of heart disease from diphtheria that had been uniformly fatal in ten previous cases reported by one of the authors. Obviously, the view as to the danger of digitalis in diphtheria required some modification.

It was considered that the results of animal experiments might serve as a guide. Bush [3] had performed some experiments on dogs and frogs, from which he deduced that "the heart is definitely rendered more susceptible to ouabain by the diphtheria toxin." The tables in his paper do not justify any conclusion. While the present work was in progress, a paper appeared by Edmunds and Cooper [4] on a study of cardiac stimulants in circulatory failure due to diphtheria in dogs. They found digitalis an effective circulatory stimulant in diphtheria, but they also state that the hearts of the dogs with diphtheria "were much more susceptible to digitalis than are the hearts of normal dogs."

EXPERIMENTS

Over fifty experiments were performed on the cat. Satisfactory observations were made in twenty-nine experiments, and the results of these only, presented in the accompanying table, will be considered. Some of the remaining animals were employed for testing the activity of the diphtheria toxin. The others died during the night, so that sufficient observations could not be made. Diphtheria toxin [5] was injected subcutaneously in different doses and dilutions. After varying periods of time, the animal received ouabain solution, 1:100,000, freshly prepared, and injected slowly by vein until death. The operation was performed with local anesthesia.

In the early experiments there was simply an attempt to determine the presence or absence of direct synergism between diphtheria toxin and ouabain before excessive depression set in. This could be measured by the fatal dose of ouabain in animals that had received large doses of diphtheria toxin.

In the later experiments an effort was made to determine whether there was any indirect synergism between diphtheria toxin and ouabain, as will be explained. In these cases, as a rule, smaller doses, sometimes repeated doses, of diphtheria toxin were employed, and longer periods up to ten days elapsed between the initial injection of the toxin and the ouabain administration. In the latter experiments, heart rates and blood pressure readings with the mercury manometer were taken at the time of the ouabain injection.

In all cases, the heart was examined post mortem for gross lesions and in many cases for microscopic lesions. The latter examinations were made by Dr. James Ewing of the department of pathology.

In a previous study [6] it was shown that starvation increased the fatal dose per kilogram of ouabain for cats, and that when the mean of the original weight and new weight after starvation at the time of the ouabain injection was employed for the calculation, the fatal dose per kilogram was practically the same as that for a normally fed animal. In a typical instance the calculation would be as follows: A normal animal weighing 2.5 Kg. would require a total of 0.25 mg. ouabain intravenously to cause death, or 0.1 mg. per kilogram. If this animal was starved several days and its weight decreased to 2 Kg., it would now require a total of 0.225 mg. of ouabain, or 0.1125 mg. per kilogram. If the total dose after starvation, 0.225 mg., is divided by the mean of the two weights, 2.25 Kg., the dose of ouabain per kilogram would again be 0.1 mg. This method of calculation was employed in this study because animals poisoned by diphtheria toxin refused food, had vomiting and diarrhea, and lost considerable weight.

RESULTS

The results obtained are given in the accompanying table, showing the dose of diphtheria toxin per kilogram, the time elapsing between the diphtheria and ouabain injection, the condition of the animal on the day of the ouabain injection, the dose of ouabain expressed as the percentage of the average fatal dose for normal animals, and the reaction of the animal to the ouabain injection.

The effect of the diphtheria toxin varied considerably in different animals with different doses and with the same doses. For instance, some animals died within twenty-four hours after 1 c.c. per kilogram of 1:20 diphtheria toxin; others were still alive three days after a similar dose. Animals could be divided according to their general appearance into two classes: 1. Those designated as extremely depressed (e. d.) in the table had marked muscular weakness, ataxia, and slight diminution in sensation of pain. They refused food, vomited and sometimes had bloody diarrhea. They were lethargic and reclined most of the time, but were still able to walk about. Anesthesia was necessary for the operation. 2. Those animals designated as moribund (m.) in the table were practically in collapse. There was almost complete muscular paralysis, relaxation of sphincters, bloody diarrhea and loss of sensation, so that the operation could be performed without anesthesia without evidence of pain. The tissues were dry, and the veins were nearly empty; the carotid arteries almost collapsed, giving only the faintest pulsation, the vessel wall having a marked yellowish discoloration, in some cases, when the blood was expressed. The respiration was markedly depressed, slow, shallow and sometimes irregular. The temperature was below normal. The heart was very feeble, and occasionally irregular. The pulse pressure was usually so small as to register only the faintest movement in mercury of the blood pressure manometer. Those animals designated as nearly moribund (n. m.) in the table presented practically the same appearance to a slightly less

* From the Department of Pharmacology, Cornell University Medical College.

1. McCullough, H.: On the Administration of Digitalis to Children with Diphtheria, South. M. J. **14**: 110 (Feb.) 1921.
2. Bie, V., and Schwensen, C.: The Effect of Digitalis in Two Cases of Arrhythmia in Diphtheria, J. Infect. Dis. **30**: 308 (March) 1922.
3. Bush, A. D.: Drug Action as Modified by Disease Toxins: 1. Ouabain vs. Diphtheria Toxin, J. Pharmacol. & Exper. Therap. **13**: 55 (April) 1919.
4. Edmunds, C. W., and Cooper, R. G.: Action of Cardiac Stimulants in Circulatory Failure Due to Diphtheria, J. A. M. A. **85**: 1798 (Dec. 5) 1925.
5. I am indebted to Dr. E. D. Banzhaf of the Willard Parker Hospital for the supply of diphtheria toxin which I used.
6. Gold, Harry: Digitalis Elimination, Arch. Int. Med. **32**: 779 (Nov.) 1923.

degree, the animal retaining slight sensation and offering very feeble struggle when tied on the table.

In the postmortem examination, the hearts appeared pale and flabby, and contained gross hemorrhages from the size of a pinhead to about 0.25 cm. in the subendocardium of the wall, at the base of the papillary muscles, and the valves, more commonly in the left ventricle. Similar hemorrhages were sometimes seen under the mural pericardium. Microscopically, the essential lesions consisted of miliary interstitial abscesses, thrombosis of blood sinuses with cellular proliferation about them, hyaline cytoplasm, and poorly staining fibrils in many muscle cells. With the larger single doses of diphtheria toxin, gross hemorrhages in the subendocardium were more constant, larger, and more numerous after twenty-four hours than following small repeated doses after several days. In the latter cases, even though the animals were much more depressed, there were often no gross hemorrhages visible in the heart. Starvation, undoubtedly, contributed to the depression in these cases.

The reaction to ouabain was typical in all instances in which the animal, though markedly depressed, was not moribund. As the dose of ouabain approached near the fatal, there was respiratory stimulation, marked tachycardia which was followed by ventricular fibrillation attended by a typical convulsion, and then the respiration stopped. In those animals that were moribund, the mode of death was usually atypical. There was generally no convulsion when the fatal dose was injected. The respiration usually stopped first and the heart failed to go through the stage of marked acceleration of the rate, but showed rather a tendency to slowing and heart block, with a ventricular rate as low as 36 a minute in one case, and frequently no ventricular fibrillation. In some cases, the blood pressure would fall after a variable percentage of the fatal dose of ouabain was injected and then the respiration, previously depressed, would cease; about five minutes later there was cessation of the heart beat.

The question arose whether in these moribund animals the toxic effects of digitalis on the heart were not partly indirect through the paralysis of respiration. This thought, however, was not borne out in two experiments in which artificial respiration was started immediately as the respiration ceased. In one instance, in which the respiration stopped as the cannula was being inserted, the heart ceased beating about five minutes later even though artificial respiration by intermittent compression of the chest was started at once. In another instance, while the operation was being performed the respiration stopped, the blood pressure dropped to 36 mm. of mercury, and the heart beat was feeble and regular at 90 a minute. Artificial respiration by means of the tracheal cannula was started at once, also the ouabain injection. Within twenty minutes, after 55 per cent of the usual fatal dose for normal animals had been injected, heart block with a ventricular rate of 36 was induced, and eight minutes later, ventricular fibrillation occurred, the animal having received a total of 68 per cent of the average fatal dose of ouabain for normal animals.

In the early part of the work it became evident that animals markedly depressed by the diphtheria toxin were not more susceptible to ouabain than normal animals. The first animal encountered that was nearly moribund at the time of the ouabain injection (cat 18) required only 64 per cent of the average fatal dose of ouabain to cause death. An effort was therefore made to test further the tolerance of nearly moribund animals. There was considerable difficulty in obtaining animals in that state, however, because of the brief interval often between death and the beginning of the process of circulatory collapse. Thus, an animal might look fairly well in the morning, become moribund in a few hours, and die while being tied on the table or while the cannula was being inserted. This occurred in five of the thirteen animals reduced to that condition before the injections of ouabain could be made (animals 25 to 29 in the table).

*Results of Experiments with Ouabain in Cats**

Cat	Dose of Toxin per Kilogram	Interval	Condition of Animal: General	Blood Pressure	Heart Rate	Dose of Ouabain	Reaction
1	1 cc. 1:20	1 day	e. d.	...	...	158	Typical
2	1 cc. 1:20	1 day	e. d.	...	...	115	Typical
3	1 cc. 1:20	1 day	e. d.	...	...	89	Typical
4	1 cc. 1:20	1 day	e. d.	...	...	94	Typical
5	1 cc. 1:20	1 day	e. d.	...	...	123	Typical
6	1 cc. 1:20	1 day	e. d.	...	...	83	Typical
7	1 cc. 1:20	1 day	e. d.	...	...	117	Typical
8	1 cc. 1:20	1 day	e. d.	...	...	106	Typical
9	1 cc. 1:20	3 days	e. d.	...	...	140	Typical
10	1 cc. 1:100	1 day	e. d.	190	215	103	Typical
11	1 cc. 1:100	2 days	e. d.	110	150	102	Typical
12	0.5 cc. 1:100	2 days	e. d.	130	204	98	Typical
13	0.5 cc. 1:100	3 days	e. d.	100	198	102	Typical
14	1 cc. 1:20	1 day	e. d.	...	176	104	Typical
15	1 cc. 1:20	1 day	e. d.	...	130	81	Typical
16	0.5 cc. 1:100 0.5 cc. 1:100	8 days 2 days	e. d. e. d.	100	100	72	Typical
17	0.5 cc. 1:100 1 cc. 1:100	5 days 1 day	e. d. n. m.	110	160	68	Typical
18	1 cc. 1:20	1 day	n. m.	...	210	64	Typical
19	1 cc. 1:100	3 days	n. m.	82	150	82	Atypical
20	1 cc. 1:100	2 days	m.	70	160	36	Atypical
21	0.5 cc. 1:100	5 days	m.	80	102	62	Atypical
22	0.5 cc. 1:100	7 days	n. m.	120	132	109	Typical
23	0.5 cc. 1:100 0.5 cc. 1:100	8 days 1 day	e. d. m.	40	108	73	Atypical
24	1 cc. 1:20 1 cc. 1:20	1 day 1 day	e. d. m.	30	90	68	Atypical
25	1 cc. 1:100	3 days	m.				
26	0.5 cc. 1:100 1 cc. 1:100	5 days 1 day	e. d. m.				
27	0.5 cc. 1:100 0.5 cc. 1:100	6 days 2 days	e. d. m.				
28	0.5 cc. 1:100	6 days	m.				
29	0.5 cc. 1:100	6 days	n. m.				

* The abbreviation e. d. signifies extremely depressed; n. m., nearly moribund; m., moribund.

As seen in the table, the average dose of ouabain for the entire twenty-four animals poisoned by diphtheria toxin was 93.8 per cent of the average for normal animals. The sixteen animals designated as extremely depressed took an average dose of ouabain of 105 per cent of that for normal animals, while the eight animals designated as nearly moribund or moribund required an average of only 70.5 per cent of the dose of ouabain for normal animals to cause death. In the latter series, the dose was as low as 38 per cent in one animal and below 70 per cent in the majority. The low blood pressure is another characteristic of the series designated as moribund and exhibiting increased susceptibility to ouabain, the systolic blood pressures ranging from 30 to 120 mm. of mercury, most of them below 90. It is rather striking that the only animal (cat 22) which appeared nearly moribund and still retained its normal tolerance to ouabain is the only animal of that group that retained a fairly normal blood pressure. Similarly, the only animal (cat 16) of the other series designated as extremely depressed which showed a rather low tolerance to ouabain was also the only animal of that group that had a rather low blood pressure. There is no mathematical relation in evidence between the fall in the blood pressure and the increased susceptibility

to ouabain; nevertheless, there can be little doubt that the diminished tolerance to ouabain is definitely associated with a low blood pressure.

It is not possible to state what specific rôle diphtheria toxin plays in the diminished tolerance to ouabain in these moribund animals. I have a series of experiments to be published which show that various factors causing marked circulatory depression increase susceptibility to certain drugs.

COMMENT AND SUMMARY

As already stated, the experiments by Edmunds and Cooper [6] show that digitalis is an effective circulatory stimulant in dogs poisoned by diphtheria toxin. From the examples cited in their paper, it would appear that the blood pressures of their animals were very low. They also found that their dogs with diphtheria died with smaller doses of digitalis than do normal animals. That digitalis is an effective circulatory stimulant is confirmed by the present series of experiments. A considerable rise in blood pressure where it was previously low occurred in a number of animals after varying doses of ouabain. Thus, in animal 19, a systolic blood pressure of 82 was raised to 110 by 38 per cent of the fatal dose; in animal 11, a systolic pressure of 110 was raised to 156 after 71 per cent of the fatal dose had been injected, and was attended by a marked increase in the pulse pressure; in animal 21, a systolic pressure of 80 rose to 110 after 70 per cent of the fatal dose of ouabain was injected. The present study, however, shows that there is no direct synergism between diphtheria toxin and digitalis even though the heart has been severely injured by the toxin, and that diphtheria toxin does not diminish the tolerance of an animal to digitalis unless that animal has been reduced to a state of extreme circulatory depression or collapse.

There are clinical conditions in which patients become more susceptible to the digitalis bodies. It has been frequently seen [7] that some patients with heart disease in the terminal stages become extremely susceptible to the toxic action of digitalis. It is doubtful, however, whether the increased susceptibility to digitalis observed in nearly moribund animals has any important bearing on the clinical problem of the use of digitalis in patients with diphtheria. The experimental work does justify the expectation that in certain cases of circulatory disturbances produced by diphtheria, digitalis in the proper dosage would be of value. There is need of more direct clinical studies of this subject.

414 East Twenty-Sixth Street.

7. Gold, Harry; and Otto, H.: A Clinical Study of Digitalis Bigeminy, Am. Heart J. 1:471 (April) 1926.

Physician as Protector of Health.—No man in America recognizes more fully the wasteful insanity of making doctors healers of disease rather than protectors of health than does the doctor himself. But until the American people are educated out of an attitude that obliges doctors to make the major part of their income from attending cases of sickness, our only hope of a healthier nation lies with the unselfish doctor who will consciously reduce his income by foisting on sick patients health advice that will tend to keep them from falling sick again. And, mark you, he must usually give this preventive advice as a side issue to medical attention, which means giving it to a sick patient whose mind, at the moment, is more on his immediate plight than on the future regulation of his habits. The doctors are not to blame. The people are. Our national motto seems to be: Millions for pills, but not one cent for prevention.—Frank, Glenn: *Wisconsin M. J.* **25**:535 (Nov.) 1926.

CAN THE PROGNOSIS OF INFANTILE ANEMIAS BE BASED SOLELY ON THE BLOOD PICTURE?*

A. A. ABALLI, M.D.
Professor in Havana University Medical School
HAVANA, CUBA

We find in infantile anemias two types easily distinguishable, from a clinical and a hematologic point of view. The first corresponds to the age limits from birth to the end of the child's second year; i. e., it comprises the life periods designated by Marfan as new-born, suckling and early infancy. The second clinical type corresponds to later stages of life, from the second year to the beginning of puberty. The second type can be readily adapted to the data we possess on the blood lesions of the adult and do not strictly belong to the pediatrician.

The peculiarities that the infant presents in relation to anemia are inherent in its anatomic condition and in the state of development of its blood-forming organs, as well as in the physical and chemical conditions of its tissues, corresponding to the first period of life. We will study this syndrome especially in this period.

The present classifications of infantile anemias do not appear to me to meet all the clinical necessities, corresponding to the modern pathologic views of this problem. The majority of works on pediatrics do not study them in a detailed manner.

On studying some of these classifications, we constantly find an etiologic basis mingling with a pathologic one, or the morphology of the blood with a clinical conception of the cases, and this leads to errors that subject these classifications to criticism on account of their lack of harmony, making them indefensible; so much so that recently Weill and Dufourt have deemed it more practicable to consider the anemias of early infancy from a clinical and pathologic aspect, not attempting to make a classification. The old classifications of Hayem, Monti, Geissler and Japha can only be referred to from an historical point of view. Petroni, in his classification, utilizes the etiology, pathogenesis, pathologic anatomy and hematology, giving the last a characteristic value, as reflecting all the lesions of the disease. He divides them into pure and complicated anemias, including in the first chlorotic anemia, simple anemia and progressive pernicious anemia, and, in the complicated or secondary anemias, pseudoleukemia, splenic anemia with little reaction on the part of the erythroblastic apparatus, and a third type in which one finds the conditions of adult splenic anemia; i. e., a reduced globular value, with leukopenia especially marked in the neutrophil granulocytes.

The Argentine professor Acuña proposes that infantile anemia be not considered as a clinical entity but as a syndrome in which the predominance of some of its factors as regards duration, intensity and action give rise to the different types; and proposes their division into simple anemia of a chlorotic type and severe pseudoleukemic anemia, adding in later infancy pernicious anemia.

The divisions established by Pfaundler comprise three groups: 1. Anemia brought about by a primitive

* Read before the Section on Diseases of Children at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

* Because of lack of space, this article is abbreviated here by the omission of photomicrographs, case reports and blood charts. The complete article appears in the Transactions of the Section and in the author's reprints.

reduction in the number of red blood corpuscles and comprising congenital anemia, anemia arising from disturbances of nutrition, school anemia and the chlorosis of puberty. 2. Anemia produced by loss in the number of red blood corpuscles (produced by external and internal hemorrhages with strong reaction on the part of the bone marrow). 3. Anemias of unknown origin, comprising tuberculous anemia and Riemer's pernicious anemia, Jaksch's anemia, the chlorotic family anemia, Banti's anemia and Gaucher's megalosplenic anemia. Pfaundler studies also the pseudo-anemias, which are difficult to understand, as he refers to them as including pale children without any change in the blood.

Giorgi's classification is similar to Pfaundler's. He divides them into four groups: anemia from primitive alteration in blood formation, anemia secondary to losses of blood, hemocytolytic anemia and apparent anemia.

Dunn accepts the following modification of Morawitz' classification: First, anemias produced by loss or increased destruction of blood, which include: (1) anemias from hemorrhages; (2) anemias due to toxins or known chemical poisons; (3) anemias produced by bacteria or hemolytic metabolic toxins; (4) anemias from the action of *Bothriocephalus latus;* (5) hemolytic anemias of unknown origin, with the following subdivisions: (*a*) acute types, with leukocytosis; (*b*) chronic types (pernicious anemias); (*c*) anemia infantum pseudoleukaemica. Second: Anemias due to defect or reduction in blood formation, with: (1) congenital aplastic anemia; (2) anemias produced by neoplasms (tumors) or by sclerosis of the bone marrow; (3) anemias due to disturbances of nutrition; (4) anemias of unknown origin, including chlorosis. This classification is considered unsatisfactory by its own author.

Leon Tixier divides anemias into: (1) simple anemias, with a clinical form of anemia of a chlorotic type; (2) severe anemias, which include severe types of pernicious anemia and splenic anemias; (3) anemias produced by a known etiologic factor, which include those brought about by syphilis, tuberculosis, malaria, intestinal parasites and leishmaniosis. This classification is also difficult. In Dr. Abt's recent book, Palmer Lucas takes up successively: chlorosis, and the predominating factors with relation to blood destruction in hemolytic jaundice (congenital and familial), polycythemia, pernicious anemia, secondary anemia, aplastic anemia, idiophatic anemia, idiopathic purpura, purpura hemorrhagica, Banti's disease, Gaucher's disease, and finally leukemia and anemia infantum pseudoleukaemica. As can be seen, there is no fundamental classification in the author's nosological exposition.

We constantly see the same cause or etiologic factor producing a very different action on the hematopoietic system, bringing about so changeable a morphology of the blood that it is very difficult to determine, at the moment of clinical observation, whether we have to deal with certain hemopathologic conditions or only with evoluting stages of a future condition.

I have frequently seen anemias with active myelosis, orthoplastic or metaplastic in character, terminate in an aregenerative form with leukopenia. On other occasions, I have seen pseudoleukemic anemias of the Jaksch type develop into an aregenerative anemia, also presenting final leukemic transformations. Severe forms of von Jaksch's anemias in a very early stage of life, in which we have been able to find a blood morphology corresponding to the highest histogenic phase, with numerous forms corresponding to Ferrata's hemocytoblasts, or cells which cannot be differentiated from medullary forms, have been found to evolve favorably with a complete recovery, provided the etiologic factor was known or could be discovered. An antisyphilitic treatment, with repeated small blood transfusions and some arsenical or iron medication, has frequently given unexpected success, modifying the child's nutritive conditions and favoring a return to normal. On other occasions I have been surprised by paradoxical conditions to see a secondary anemia of an aregenerative type with an intense leukopenia follow a favorable course after a transfusion, the number of red corpuscles reaching the normal figure with a slight oligochromemia, the leukocyte count being normal; and the causative factor (in this case unknown, being a case of so-called Mikulicz disease) persisting, it subsequently developed into a final acute leukemia, without my being able at any particular moment to establish an accurate prognosis based solely on the hematologic examination till the leukemic transformation was evident.

In a good many infectious conditions, in some poorly nourished children, I have observed the appearance of lymphoblasts and cells of a nondifferentiated type with lymphocytosis, oligocythemia and oligochromemia, which have led me to think of an acute or lymphogenous leukemia, which later was modified, leading to a final recovery with a normal hematologic count.

In some children with severe anemia with splenomegaly, I have observed normoblastic crises which have not had a frank significance in favor of an improvement. I have seen two surprising cases of anemia with splenomegaly, connected with hereditary syphilis, in which antisyphilitic treatment, in the short space of a week, reduced the dimensions of a spleen measuring 27 by 18 cm. in children aged 4 and 6 years to its normal limits. This condition was followed by an angina with necrotic and hemorrhagic characteristics and symptoms of purpura with the hematologic picture of an acute leukemia, to which the patients succumbed notwithstanding that during all the previous periods of observation I had never been able to suspect, from successive examinations of the blood, the possibility of transformation into leukemia, the cases appearing only as severe ones of more or less intense secondary anemia.

After therapeutic applications of roentgen rays, one frequently observes hematologic formulas of difficult interpretation, in relation to prognosis, solely based on the blood count.

In chronic infections, such as tuberculosis, I have been able to appreciate formulas corresponding with myelogenous reaction with leukocytosis with neutrophil polymorphonuclears, alternating with lymphocytosis, without this meaning that there existed a simultaneous condition of erythropoiesis. In certain cases of subacute visceral tuberculosis and in the cases of generalization through the lymphatic system we have been able to determine an increase of mononuclear elements or a histioid form; that is, signs of a participation of the endothelial reticular system. In the case of one of the accompanying clinical histories, I have observed circulating giant elements which corresponded to endotheliocytes conforming to the description given by Cunningham and Sabin but of a much larger type. The appearance of these elements concurred with the development of a spontaneous unilateral pneumothorax, and when this was absorbed spontaneously, these elements gradually disappeared from the circulating blood. Dr. David Riesman of Philadelphia, on a visit to my

clinic at Mercedes Hospital, was able to see the patient and examine the blood preparations.

In diseases produced by lack of nutrition, especially in Moeller-Barlow's disease, which have not been diagnosed or treated in time and which we see in their advanced stages, we find severe anemia with orthoplastic and metaplastic reactions, generally accompanied by a pronounced reduction in the corpuscular count, which have not, however, the grave import that we should be inclined to attribute to them solely from a hematologic examination, as they easily respond to the necessary dietetic correction with the addition of an accessory nitrogenous factor (vitamin), this improvement being brought about within a relatively short time. In these cases it is not infrequent to find some splenomegaly, although this is apt to be moderate in development.

Infectious diseases, at times mild, are apt to provoke, in children under 5 months of age, transitory myeloid reactions which can mislead the clinician if he fails to take into consideration its pathogenesis and make his deductions solely from the blood examination. In early infancy there exists a tendency on the part of the blood-forming organs to react in an embryonic manner, nucleated red blood corpuscles passing into the circulating blood on even the slight development of an anemia. Other elements of the same myeloid reaction, belonging to the granulocytic series, can readily be demonstrated in the blood of a child in this condition. Given the scant iron reserve belonging to the child and its exclusive dependence on a food with a low iron percentage, it is possible to explain the fall in the hemoglobin percentage, out of proportion to the reduction in the number of red blood corpsucles, the globular value being under normal. We find this condition, likewise, in anemias of a pernicious type occurring even in older children, thus substantially differing from that of the adult.

In the anemias of young children, the spleen is unduly enlarged, giving these a peculiar clinical aspect, which in my opinion has been wrongly interpreted. The term "splenic anemia" does not appear to me to correspond to a nosological entity, the enlargement of the spleen being a common factor in certain infantile hematopathologic types in which a vicarious hematopoietic reaction is provoked in this organ, which is, moreover, disposed, during the first years of life, to this easy adaptation, similar to that belonging to fetal life. Wherever we have the intervention of a hemolytic factor, be it of a toxic or a toxi-infectious order, the macrophagic function of the spleen is stimulated and as a result we have hyperplasia of the splenic pulp and of the interstitial connective tissue, with the establishment of a splenomegaly.

It is also interesting to note, as peculiar to the infantile period, the pronounced hemorrhagic tendency affected by severe forms of anemia. In this connection, investigations should be directed toward determining the influence which a thrombocytopenia might bring about; the count of blood platelets should be made as a routine method. The new conceptions of the theory introduced by Weil of Lyons, together with the studies of Kaznelson of Prague, and the work of the Danish physiologist Krogh, applied by Brill of Columbia, have complicated the explanation of this hemorrhagic syndrome, which we so often meet in children and which possibly might be explained by a peculiar susceptibility connected with functional splenic insufficiencies. As a proof of this we have the exceptional occurrence, in other periods of life, of the severe symptoms of purpura which belong to the fulminating type of Henoch.

The new ideas of Ferrata on the intervention of the reticulo-endothelial system in blood lesions lead me also to believe that during infancy the mesenchymatous cells possess more active hematogenic functions. The possible toxic influences on the nutrition of the child, the extreme liability to which is confirmed by Finkelstein and Czerny, makes me consider the anemia of the nursling much more complex than that of the adult.

I believe that the modern conception of the blood makes it necessary to study in a more attentive manner the state of the plasma, its influence on the production of the different anemias constituting the most important problem of the present and the future. At present too much importance, from the standpoint of diagnosis and prognosis, is given to the morphology of the blood, leading to judgments, happily today on the road to being rectified, which constitute an error of modern medicine, which, on returning to the strict anatomopathologic conception, loses sight of physiopathology, which is what mostly interests the clinician when he treats his patients.

One of the great difficulties today is the tendency on the part of each author to create his own nomenclature in connection with the normal and pathologic elements of the blood. This makes it difficult for the practical clinician; an attempt should be made to standardize blood nomenclature.

The errors resulting from basing all our conclusions on simple data arising from corpuscular, leukocytic and differential blood counts constitute a substantial mistake, so far not sufficiently criticized, the necessity of referring these data to the total volume of the blood or at least of making a comparative evaluation of the plasma and the formed elements not having been yet sufficiently generalized. From the study of the state of the blood in conditions of dehydration subsequent to infantile diarrheas and in the hydremias of nephrosis we are today perfectly aware of the errors that can arise from the sole consideration of blood counts.

In the light of our present knowledge, it becomes necessary today to study the etiologic factor of any blood disease, making use of all the means which the laboratory can furnish in the examination of our patients, and thus we can arrive at proper and practical therapeutic deductions, for the blood must not be considered as a tissue but in connection with its humoral function, as the carrier of the elements necessary to the maintenance of the life of all the organs and tissues as well as the means of elimination of deleterious products resulting from the body metabolism. Convinced that the different blood-forming organs respond to different stimuli, at times with the same formula of reaction, we find it necessary to direct our investigation to what constitute the different stimuli, with the corresponding result of an orthoplastic, metaplastic or displastic nature, this being preferable to engaging our attention in considering solely the resulting hematologic picture, which can direct us but little as regards therapeutic action.

Some of the most practical examples that I can bring forward in support of this view, which, I hold, should be firmly established, have been suggested by the study of the anemias following intestinal parasitism. I have conducted investigations, especially in connection with trichocephaliasis, and am convinced from the experience acquired that if in their treatment we had not insisted on the suppression of the parasitism, we would not have

observed a return to normal of many children whose hematologic formulas should have led us to complex appreciations based on myeloid reactions of a most extravagant character, at times following the types of severe aregenerative anemias or of those with a high leukogenesis, reaching sometimes the figure of 76,000 with 83 per cent lymphocytosis, conditions that disappeared with anthelmintic treatment.

Another example, already well recognized in this respect, is that connected with a hereditary syphilis which has not been recognized and consequently has not been treated, and which can bring about the most varied examples of Jaksch-Luzet's pseudoleukemic anemia and even forms to be confounded with Banti's syndrome. The same can be said of tuberculosis.

Malaria furnishes us with similar examples, and the examination of smears from a spleen puncture has permitted Professor Ferrata to recognize the rôle of his hemo-istioblasts and has led him to his pathogenic conception of pernicious anemia and leukemia. Leishmaniosis offers us similar examples.

Meanwhile, the experimentation carried out in this respect on the one hand and clinical observation on the other do not permit us to deduce an exact value from the blood complex, the clinician not being able to base the prognosis of the anemias of infancy on the simple study of hemograms. He who desires to get as near the truth as possible has to fall back on the etiologic foundation of these processes, the only reliable foundation for therapeutic success.

THE RACIAL FACTOR IN BASAL METABOLISM *

EDWARD L. TURNER, M.S.
BEIRUT, SYRIA

During the last three or four years, various investigators have called attention to the fact that the basal metabolism standards, as based on the Harris and Benedict, and the Aub and Du Bois prediction tables, cannot be used everywhere without certain modifications and corrections. In a report of some work done on Chinese students four years ago, Earle [1] states that the metabolic rate of the Chinese was set at a lower level than that of western subjects. Yano [2] states that low metabolism is probably a characteristic of the Japanese race, and Takahira [3] also reports an average metabolic rate of Japanese somewhat lower than that expected according to the American prediction tables.

In two recent papers, MacLeod, Crofts and Benedict [4] have brought up the question of the racial factor as playing a rôle in metabolic rate. These investigators performed experiments on nine young Chinese and Japanese women students in American colleges. Their subjects were reported to be living under the same general conditions, as far as food and activity were concerned, as their American classmates. Nevertheless, the average metabolic rate for this group of subjects was 10.4 per cent below the Harris and Benedict prediction standards. They still are low when the standards are corrected by subtracting 5 per cent, which is the correction factor suggested by these authors for the prediction standards.

The material cited in this preliminary report consists of the results of basal metabolism tests performed on healthy young men and women students of the medical and nursing schools of the American University of Beirut. The student body is a mixture of Egyptians, Persians, Palestinians, Iraqians, Transjordanians, Syrians and Armenians, together with scatterings of students from other nearby countries. In this report, the Egyptians and Armenians will be considered as separate groups, and the others will be classed into one general group, which will be considered further in a detailed paper to appear later.

More than 300 tests have been performed on ninety Near Eastern subjects and thirteen Americans. All the tests were performed with a Krogh metabolimeter. Care was taken to have the subjects properly prepared for measuring the basal (or standard) metabolism. The tests were performed between 6 and 7:30 a. m., from twelve to fourteen hours after the last meal, with the subjects in a good state of relaxation. The instrument was checked for variations in the volume of the wedge-shaped spirometer at different levels, and variations did not exceed 1 per cent. There were no leaks. At least three tests were made on each student subject at intervals of from one to four or five days, and in some cases four and even five tests were made in an attempt to avoid the novelty and excitement factor. Any obviously pathologic persons were discarded. A series of check tests were made on the thirteen Americans who were members of the teaching staff, living under conditions similar to those of the student subjects. The subjects ranged between 18 and 31 years of age.

Blood pressure, pulse rate, respiratory rate, weight, sitting and standing height, and vital capacity were recorded for each person. Pirquet's pelidisi was calculated for each subject in order to obtain some index of their nutritional states. The values obtained ranged from 90 to 106, with the average for all subjects between 96 and 97.

With the Harris and Benedict prediction standards, the results of the basal metabolism tests on the various groups averaged as follows: For women, the Armenian group gave the highest average value, being —2.3 per cent. All the other women were classed into one non-Armenian group, consisting of Jewesses, Syrians, Palestinians and two Egyptians. This group averaged —5.86 per cent.

For men, the Armenian group again averaged the highest, giving a value of —1.14 per cent; fifteen Egyptians gave the lowest average value of —6.5 per cent, and the others, consisting of Palestinians, Syrians, Persians, Iraqians and Transjordanians, gave an average value of —3.0 per cent. The average value for the American staff was —0.48 per cent.

Although the difference in metabolism in general is not a great one between the various groups, and the values obtained are not far from the standards as corrected by various investigators, it is interesting to note that there is a distinct variation between the different racial groups. The Armenians give values more nearly approaching the standards, the Egyptians give the lowest values, and the Arabs of Asia Minor give a value intermediate between the others.

In two cases, the Americans were the third generation of their family living in Syria, but there was no distinct lowering of their metabolism.

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* From the Department of Physiology of the American University, Beirut, and the Hull Physiological Laboratory, the University of Chicago.

1. Earle: The Caduceus **1**: 85, 1922.
2. Yano: Mitt. a. d. med. Fak. d. kaiserl. Univ. Kyushu **5**: 189, 1920.
3. Takahira, Kitagawa, Ishibashi and Kayano: Report of the Imperial Nutrition Institute, Tokyo, 1924, p. 88.
4. MacLeod, G.; Crofts, E. E., and Benedict, F. G.: Proc. Nat. Acad. Sc. **11**: 342, 1925; Am. J. Physiol. **73**: 449 (July) 1925.

The data gathered are still too meager to permit of absolutely definite conclusions. It appears, however, that there is a distinct racial factor involved in the rate of metabolism, and considerable investigation needs to be done in that line. The differences noted may have been brought about by any one of several factors, or by a combination of several factors. Thus, climate may have played a rôle, dietary factors are probably involved, and it is quite possible that the pace of our western civilization may have set a higher metabolic rate, as Earle suggests. It is quite obvious from the material that has been obtained by the various investigators that this racial factor should be taken into consideration before applying the present prediction standards, when corrected, to the different races and even to American subjects of foreign extraction, especially Orientals and Africans.

THE EFFECT OF CLIMATE ON BLOOD PRESSURE

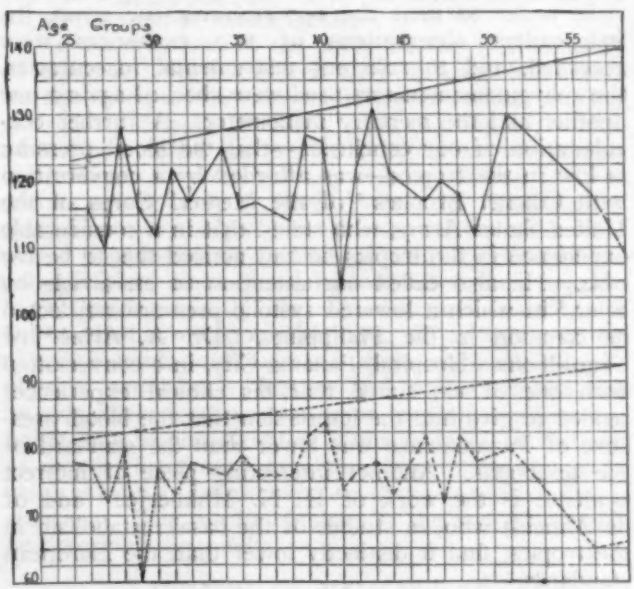
LOUIS H. RODDIS, M.D.
Lieutenant-Commander, Medical Corps, U. S. Navy
AND
GEORGE W. COOPER, M.D.
Lieutenant, Junior Grade, Medical Corps, U. S. Navy
WASHINGTON, D. C.

The blood pressure of man is known to be modified by age, sex, posture, disease, drugs, the emotions, exertion and fatigue. From observations made by us during the annual physical examination of a group of officers of the navy, it appears that climate exerts a definite effect and that in the tropics the normal blood pressure, both of natives and of visitors from the temperate zone, is distinctly lower than in cooler countries.

This physical examination of a group of naval officers was made in January on board ship in West Indian waters, and revealed the fact that blood pressure of the normal subjects of the group was from 10 to 15 mm. of mercury below our textbook[1] standards. The systolic and diastolic pressures were about equally reduced. The average reduction in systolic pressure for sixty-seven officers was 11.4 mm. of mercury. The chart represents graphically the difference between the curve assumed as normal by modern textbooks and that of our observations in the tropics. It is of interest to note at this point that the textbook standards were established from observations made largely in the temperate zone.

The frequent occurrence of low blood pressure in our examinations in the tropics impressed us as of some significance and led us to the comparative study of anticipated normals and the actual pressures found by the Rogers (Tycos) sphygmomanometer. This comparison was drawn, and the contrast between the anticipated normals and the actual pressures for the various groups of officers was demonstrated by tables and curves. The officers were grouped on the basis of age.

Consideration of any influence exerted by tropical climate on blood pressure in pathologic cases was ruled out as fallacious, and only normal or apparently normal subjects within the various age groups were studied. By this means, the expected normal systolic and diastolic pressures for the various ages served as fairly accurate criteria with which to compare the averages of pressures for all subjects included in those particular age groups. It is true, however, that these expected normal pressures for one age group are by no means invariable but are merely arbitrary and are rather to be considered as variable quantities but with fixed, though as yet only tentatively agreed on, limits. Thus, the new difficulty of comparing a constant with a variable quantity arises and leaves the only practical alternative, which we have pursued; i. e., treating the expected blood pressures for normal subjects in the temperate zone, at the various ages, as constant rather than variable, and comparing with them the blood pressures taken in the tropics. A curve showing this comparison gives low values for blood pressures of those included in our examination. These subjects were without exception natives of the temperate zone,



Variation of observations from textbook norms: solid line, systolic; broken line, diastolic.

temporarily resident in the tropics. Opinion advanced by other medical men experienced in the tropics indicates a like conclusion. Natives of the tropics appear also to share the lower blood pressure values found in the temperate zone visitor. It would be interesting to know whether the tropical zone native experienced any change of blood pressure on residing in the temperate zone.

Average Results in Blood Pressure Examinations

	Average Age	Average Systolic Pressure	Average Diastolic Pressure
1925.....	39.6	114	73
1926.....	38.7	118	75

The averages of the blood pressures of all normal subjects examined by us in the tropics, with the averages of ages, are given for the years 1925 and 1926.

The 1925 curve of age group pressures is also found to follow that of 1926. The 1925 examination included eighty-six subjects, and the 1926 examination, eighty-seven. This total of 173 cases gave an average systolic pressure 11.5 points lower than the temperate zone standard for the group, while the diastolic pressure was lowered by 11.2 points. In our cases, therefore, pulse pressure was practically unaffected; it is simply adjusted lower in the scale of blood pressure.

1. Greene: Medical Diagnosis. Osler: Practice of Medicine. Grover: Blood Pressure.

The number of officers in the various age groups ranged from one at the age of 25 to eight at the age of 32 years. No subjects were examined in the age groups of 37, 45, 50, 52, 53, 54, 55 and 57 years.

The curves shown are as follows:

(*a*) The expected normal systolic pressures for the age groups.

(*b*) The expected normal diastolic pressures for the age groups.

(*c*) The averages of systolic pressures found in the various age groups.

(*d*) The averages of diastolic pressures found in the various age groups.

Our observations indicate a lower average systolic pressure for normal subjects in the tropics than in the temperate zone. Diastolic pressure shows a like change.

In order to limit the opportunities for error, the independent observations of two examiners were recorded, and to rule out instrumental inaccuracies, the sphygmomanometers used were checked against one another and the mercury manometer. A further corroboration of our conclusion—that the blood pressure is low in the tropics—was afforded by a conversation with Colonel Brookes [2] of the Medical Corps of the United States Army, who stated that in a considerable experience in the tropics he had noticed this to be the case. He also called our attention to an article by Siler [3] in which a lowered systolic pressure was noted as common in the Philippines. Dr. A. Arias [4] of Santo Tomas Hospital, Panama City, in a conversation with one of us, stated that his clinical experiences tended to give him the impression that the blood pressure of Panamanians was lower than the standard of the textbooks. Another interesting piece of indirect evidence is the work of H. N. Mukherjee [5] and of de Almeida who, in studies of the basal metabolism in the tropics, find it distinctly lower than the European standards.

The health director [6] of the University of Minnesota furnished us with the blood pressure of eighteen foreign students, residents of tropical countries. The examinations were made in Minneapolis. This blood pressure as a group was well below the normal standard. The average age was 24, the average systolic pressure 117 and the average diastolic pressure 77. The average textbook figure for the systolic pressure of this age group would be 122, if Faight's rule is followed. The relation between the systolic and diastolic pressure is practically unchanged. Here, though this examination was made in the temperate zone and in the cool climate of Minnesota, the fact that the average pressure was low indicates that the group as a whole had a distinctly lower blood pressure from their previous tropical residence.

Studies were made of the blood pressures of sixteen of our officers examined in the tropics on their return to a cooler climate. After one month spent in northern waters, in the latter part of May and the early part of June, they showed an average rise of 9 points (systolic) above their blood pressure readings in the tropics. The same instruments were used and the same examiners made the readings. While this is a distinct rise, the pressures remain below normal, an indication that the change to the normal is not rapid.

It would appear that we have in this lowered vasomotor tone in the tropics an adaptation by nature to a difference of environment. It indicates that the whole organism is keyed to a lower note than in more vigorous climates. The lower blood pressure and lessened basal metabolism both point to a distinct reduction in physiologic activity and explain in some measure the apparent lassitude and indolence with which the warm country people are charged by the inhabitants of more northern countries. It is evident, however, that if reduction of vasomotor tone and of basal metabolism is the rule in the tropics, there must be a corresponding reduction in activity of the organism or injury to it will follow.

It is possible that the northern white man, if he at once changes his mode of life on entering the tropics, suffers little from the change, though some biologic strain must of course occur as a consequence. The danger lies in the fact that the habits of living are difficult to alter, and as the attitude of the northerner is usually one of contempt for the apparently indolent natives, he is little inclined to copy any of their customs. The observance of their routine of life is essential, however, and the restriction of both work and play to the early morning and evening, the avoidance of exposure to the direct rays of the sun during midday, the adoption of the siesta, and the avoidance of severe physical exertion are all necessary if the white man is to live in the tropics without harm. This is a matter of extreme importance to us in the United States who have a number of tropical possessions with many American civilians, as well as considerable military and naval forces, in them.

The white man at first viewed the tropics with alarm and shrank from the mysterious, death-dealing diseases that appeared unconquerable. With the discovery that these diseases were not so mysterious after all, that most of them were insect borne and could be controlled, the pendulum swung to the other extreme and it was felt that the northern white man had nothing to fear from the tropics. The climate itself was not noxious, but only the diseases to be found in it, to which the climate bore only an oblique relation. Both of these extreme views are probably equally erroneous, and these studies regarding blood pressure, and those of Mukherjee and de Almeida on basal metabolism in the tropics, indicate that the climatic conditions themselves are capable of producing profound effects on the organism that cannot be disregarded if the white man is to remain in the tropics with impunity.

The blood pressure and basal metabolism being affected by a tropical climate, there is no doubt that an influence on other physiologic processes is exerted. In reference to the leukocyte count in the tropics, Hughens [7] stated that he had observed a slight leukopenia as a characteristic of counts taken in tropical climates. This observation was made in a series of approximately 300 cases at the Christiansted Hospital, Christiansted, Island of St. Croix, where Dr. Hughens found an average of 5,500 leukocytes and 40 per cent polymorphonuclears as an apparently normal blood picture.

These and other possible variations in physiologic standards produced by climate deserve further study and open an interesting field for additional research.

2. Brookes: Personal communication to the authors.
3. Siler, J. F.: Review of Reports of 1924, Annual Physical Examination of Officers in the Philippine Islands, Mil. Surgeon **58**: 6 (June) 1925.
4. Arias, A.: Personal communication to the authors.
5. Mukherjee, H. N.: The Basal Metabolism of Man in the Tropics, J. A. M. A. **86**: 1384 (May 1) 1926.
6. Diehl, H. S.: Personal communication to the authors.
7. Hughens, H. V.: Personal communication to the authors.

SUMMARY AND CONCLUSIONS

1. The blood pressure is modified by climate.

2. The textbook standards were made in the temperate zone and do not state the correct figures for the tropics.

3. The native of the tropics has a blood pressure lower than the temperate zone standard.

4. In the tropics, the blood pressure (systolic) of northern white men examined by us averages from 10 to 15 mm. of mercury below the normal for the temperate zone.

5. The change is not a rapid one and represents a lower vasomotor tone and a general slowing of physiologic activity.

6. The routine of life must be modified to suit this alteration of physiologic activity, if injury to health is to be prevented.

7. This change and the mode of life include limiting regular work to the cooler parts of the day, avoiding excessive physical exertion, the adoption of the siesta, and observing precautions as to food and clothing.

8. The view that tropical diseases are the only source of danger to health for the white man in the tropics is erroneous.

9. Harm from the climate itself does occur and is probably considerable if the manner of living is not suited to the changed environment.

10. The blood pressure and basal metabolism being affected by climate, it is probable that variations in other physiologic processes occur, and should be investigated. Further studies in blood pressure and basal metabolism in the tropics should also be made.

VITAL CAPACITY OF NEGRO RACE*

W. G. SMILLIE, M.D.
AND
D. L. AUGUSTINE, Sc.D.
NEW YORK

This study of the vital capacity of negroes is a by-product of a hookworm study in a group of about 2,000 white and negro children of school age, in south Alabama. These children were measured carefully to determine the effect of varying intensities of hookworm infection on normal growth and development.[1] One of the measurements used in the determination of the physical condition of these children was vital capacity. We were surprised to find that normal negro children had markedly lower vital capacity than white children of the same age, sex and economic status.

The groups studied were children of school age (from 6 to 16 years) from the rural districts of Alabama. Their dietary contained sufficient calories but was badly balanced. The white families lived on little farms, side by side with the negroes and on a similar economic level. Hygienic conditions were similar in the two races. The general nutrition of the children of the two races was the same. Practically the only variant was the sharp social barrier that separated the negroes from the whites. Only normal children are included in the analysis, all those infected with hookworms or malaria, and those having obvious respiratory disease or any physical deformity being excluded from the series. Under these closely comparable conditions we had expected to find that all the physical measurements of the normal children, white and black, would be quite similar. This was found to be the case in the normal growth curves of weight and of standing height. The hemoglobin index of the two races almost coincided. There was, however, a marked difference in vital capacity between the white and negro children. This difference was so striking and so constant that it occurred to us that it might be a racial characteristic.

Foster and Hsieh [2] have noted a lower vital capacity in the Chinese and considered this to be a racial factor. Wilson and Edwards,[3] in the course of another study, have examined thirty-eight normal colored children from 8 to 14 years of age, and noted that the vital capacity of these children was strikingly below that of any other group studied. They state that these studies suggest a possible racial factor.

Our observations in the study of the vital capacity of white and negro children were striking, but before we attempted to draw any definite conclusions we considered it advisable to study also a group of normal adults, both white and negro, living under comparable conditions. An excellent opportunity offered itself in a state prison camp at River Falls, Ala. The men of this camp were selected by the state from their state prison population, on the basis of their excellent physical condition, since the state contracted their services to the logging camp. The men were well housed, well fed and had excellent medical care. They were required to work hard, and most of them were in splendid physical condition. Negroes and whites worked side by side, their food was the same, and all conditions of living may be considered as comparable. The methods of measurement used were the same in the groups of children and of adult men, so that one description is sufficient. The results obtained in the two groups will be described separately.

METHODS OF MEASUREMENT

In the examination of the children, the only clothing was a cotton shirt and trousers for the boys, and correspondingly light clothing for the girls. No weight allowance was made for their clothing. The prisoners removed all clothing except undershirt and trousers. Two pounds weight was allowed for their clothing. The measurements taken were standing height, weight, stem length, hemoglobin and vital capacity. The blood of all prisoners was examined for malaria, and the feces of all children for hookworm infection. The spirometer used for the vital capacity determinations was the Sanborn wet spirometer. A careful physical examination of the chest was not made in each case. The prisoners received periodic physical examinations and were picked men. Obvious cases of cardiac or pulmonary disease or of physical deformity were, of course, excluded from the series.

The whites, both children and adults, were Americans of Scotch-Irish pre-Revolutionary stock. There were no other racial stocks in the group, since there has been no immigration to the rural South. Practically all the negro children were pure stock, but there were a few mixed bloods among the prisoners. It was impossible to determine the proportion of negro blood in these cases of mixed bloods, so we considered all persons with mixed bloods as negroes.

* From the Hookworm Research Laboratory of the International Health Board at Andalusia, Ala.

1. Smillie, W. G., and Augustine, D. L.: Hookworm Infestation: The Effect of Varying Intensities on the Physical Condition of School Children, Am. J. Dis. Child. 31: 151-163 (Feb.) 1926.

2. Foster, J. H., and Hsieh, P. L.: The Vital Capacity of the Chinese: An Occupational Study, Arch. Int. Med. 32: 335-342 (Sept.) 1923.

3. Wilson, M. G., and Edwards, D. J.: Standards for Normal Vital Capacity for Children: The Lung Capacity in Certain Intrathoracic Conditions, Am. J. Dis. Child. 22: 443 (Nov.) 1921.

RESULTS OF THE ANALYSIS

School Children.—Nine hundred and thirty-six children are included in this series—539 whites and 397 negroes. There were 252 white boys, 287 white girls, 172 negro boys and 225 negro girls. The children were divided into two-year age groups, the age recorded being that of the nearest birthday. Table 1 compares the mean vital capacity of the white boys with that of negro boys of the same age groups.[4] Chart 1 is a diagramatic comparison of the vital capacity of our series of white and negro boys with Stewart's [5] standards of vital capacity for children. It will be noted that the curve of the vital capacity of our series of white boys almost coincides with Stewart's standard curve. The curve of negro boys is markedly and consistently lower in all age groups. The data for the girls, both white and negro, are given in table 2 and chart 2. These correspond to table 1 and chart 1, and illustrate the same facts; namely, that the vital capacity of our series of white children is quite similar to Stewart's standards, but the vital capacity curve of negro children

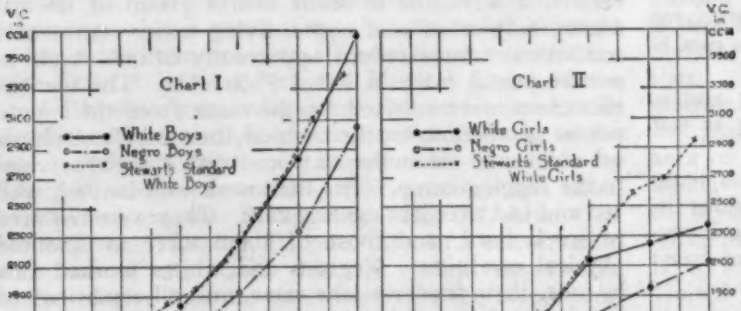


Chart 1. Chart 2.

Charts 1 and 2.—The mean vital capacity of white children compared with that of negro children.

is markedly lower than that of the white children. In the older age groups, the white girls have a lower vital capacity than Stewart's standards for Northern girls. We have no explanation for this. It may be due to the small series of cases in these two older age groups.

TABLE 1.—*Mean Vital Capacity, White and Negro Boys*

Ages	White		Negro	
	No. of Cases	Mean V. C.	No. of Cases	Mean V. C.
6- 7	39	1,185	22	1,089
8- 9	62	1,511	34	1,167
10-11	50	1,840	38	1,597
12-13	41	2,271	42	1,931
14-15	38	2,830	28	2,351
16-17	22	3,090	8	3,050
	252		172	

The normal growth curves for standing height and for weight of the children have already been published in our hookworm study.[1] These curves for the negro children coincided very closely with those of the white children, and there is little variation in the growth curves for standing height and weight from Clark's [6] standards for normal white children in the Southern states. The stem length curves of the two races, however, do not coincide, for the negroes, both boys and girls, have a shorter stem length than the white children. This is shown in charts 3 and 4. There are no available stem length standards for Southern white children, so that we have used as a standard Clark's [7] group of normal white school children of good to excellent nutrition. The curve for our series of white children is lower than Clark's standard, corresponding more closely to his observations on children with fair to poor nutrition.

TABLE 2.—*Mean Vital Capacity, White and Negro Girls*

Ages	White		Negro	
	No. of Cases	Mean V. C.	No. of Cases	Mean V. C.
6- 7	51	1,004	28	935
8- 9	71	1,367	48	1,212
10-11	74	1,690	56	1,459
12-13	49	2,142	44	1,750
14-15	23	2,257	32	1,968
16-17	13	2,365	17	2,115
	287		225	

The comparison of stem length of negro and white children suggests that negroes have longer limbs and shorter trunks than white children, and this fact may explain, in part at least, their lower vital capacity.

Adult Male Prisoners.—About sixty white and 100 negro prisoners between 16 and 65 years of age were examined. Some were excluded because they did not know their exact age, or because of some physical defect or drug addiction. The measurements of fifty-seven whites and eighty-four negroes were accepted for the analysis. The methods of examination have been described in a previous paragraph. In table 3 is given a comparison of the percentage of normal vital capacity of the white and negro prisoners, calculated from surface area [8] and grouped in ten-year age periods.

TABLE 3.—*Comparison of the Percentage of Vital Capacity of Male Whites and Negroes, Calculated from Surface Area—Myers' Tables—Grouped in Ten Year Age Periods*

Ages	White		Negro	
	No. of Cases	Per Cent V. C.	No. of Cases	Per Cent V. C.
15-24	14	98.5	25	69.9
25-34	16	99.8	31	69.7
35-44	15	92.4	11	67.6
45-54	12	92.6	17	66.6
	57		84	

Chart 5 superimposes our observations on Bowen and Platt's [9] curve showing the effect of age on

4. The probable error of the mean, the standard deviation with its probable error and the coefficient of variation have been calculated for this table and all of the following tables. For the sake of brevity they are not included but may be obtained from the authors on request.

5. Stewart, C. A.: The Vital Capacity of the Lungs of Children in Health and Disease, Am. J. Dis. Child. **24**: 451-496 (July) 1922

6. Clark, Taliaferro; Sydenstricker, Edgar; and Collins, S. D.: Heights and Weights of School Children, Pub. Health Rep. **37**: 1185-1207 (May 19) 1922.

7. Clark, Taliaferro; Sydenstricker, Edgar; and Collins, S. D.: Weight and Height as an Index of Nutrition, Pub. Health Rep. **38**: 39-58 (Jan. 12) 1923.

8. Myers, J. A.: Vital Capacity of the Lungs, Baltimore, William and Wilkins Company, 1925.

9. Bowen, B. D., and Platt, D. L.: The Relation of Age and Obesity to Vital Capacity, Arch. Int. Med. **31**: 579-589 (April) 1923.

vital capacity in white men. Our data for the white prisoners in various age groups coincide with the data of these authors, but the curve for the healthy adult negroes is strikingly lower in all age groups.

Table 4 gives a comparison of the percentage of vital capacity of adult healthy white and negro prisoners. Those over 45 and under 20 years of age were excluded from the series. We have calculated the percentage

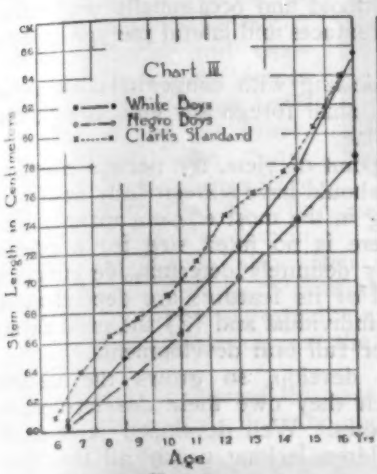


Chart 3.

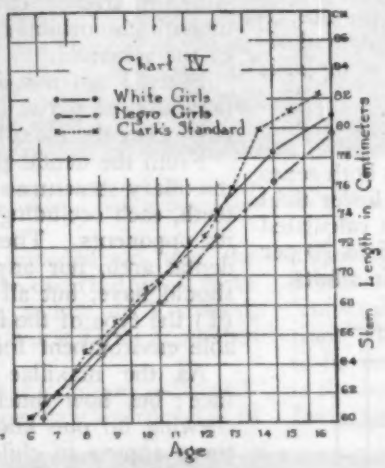


Chart 4.

Charts 3 and 4.—Main stem length of negro children compared with that of white children.

of the vital capacity from surface area, from standing height and from sitting height. Myers' tables were used as the standard. The vital capacity in negroes is markedly lower than that of the whites in all three of the calculations. It will be noted that in both races the calculation of percentage of vital capacity from surface area is lowest and that from sitting height is highest. However, the variation in the results of these methods of calculation in the white groups was slight. The variation in the result of the calculation by surface area and standing height in the negro groups was also incon-

TABLE 4.—*Comparison of the Percentage of Vital Capacity of Normal Adult Male Whites and Negroes, from Twenty to Forty-Five Years, Calculated from Myers' Tables*

	White, Mean per Cent	Negro, Mean per Cent
Calculated from surface area	96.90	69.9
Calculated from standing height	98.5	72.6
Calculated from sitting height	103.2 (42 cases)	86.3 (75 cases)

siderable. When the percentage of vital capacity of negroes is calculated from sitting height, however, the result is much higher than when calculated from standing height or surface area. This fact suggests that the strikingly low vital capacity of the negro, when calculated on the basis of standing height or surface area, is due, in part at least, to shorter trunk length of the negro race. Even when calculated from sitting height, however, the percentage of vital capacity is more than 15 below that of the whites.

Our calculations have shown that the standard deviation and coefficient of variation in both races are lowest when vital capacity is calculated from surface area, and we feel that this is the most satisfactory method of expressing vital capacity for both whites and negroes. In chart 6 we have compared the liters of vital capacity per square meter of body surface of all white males in the series, children and adults, with colored males of the same age groups. There are some irregularities in the two curves, because of the small number of cases, but the general tendency of the curves is quite evident, for in every age group the vital capacity of negroes is lower than that of the whites. The closest approximation is in the early age groups, with a rapid divergence, which reaches its maximum in adult life.

COMMENT

If properly interpreted, vital capacity is a valuable aid to the clinician in the diagnosis and prognosis of certain diseases of the chest, and also to the hygienist in determining physical fitness. Standard tables have been prepared, which are of great aid in interpretation of individual data. These tables are prepared from observations on the white race. We have measured the vital capacity of about a thousand persons, white and black, in south Alabama, and have found that the results for the whites in all age groups correspond closely to the standard tables of Myers. But the negroes, both males and females, in all the age groups studied, showed a consistently and markedly lower vital capacity than the whites. Measurements of sitting height explain this discrepancy in part, since the negroes have a shorter trunk length than whites. Even when calculated on the basis of sitting height, however, the vital capacity of negroes is more than 15 per cent lower than that of the whites. It is possible that some of these negroes had undetected pulmonary or cardiac disease; but if so,

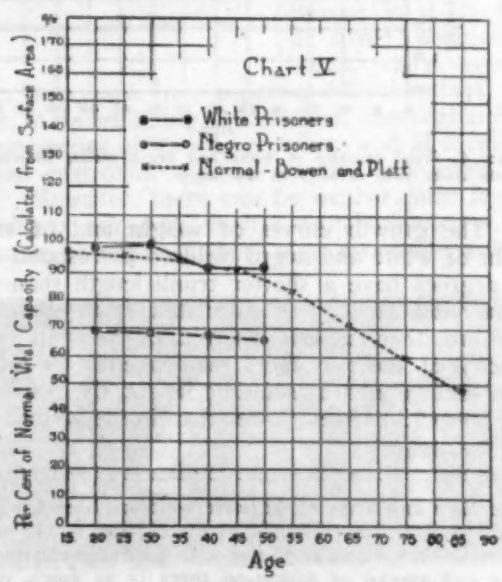


Chart 5.—Vital capacity of white and negro men, compared with normal curve of Bowen and Platt.

this did not affect the results, for the coefficient of variation was no greater in the negro groups than in the whites. Certainly, the negroes were not all affected with some disease of the chest, for the men, at least, were picked for their strength and ability to do hard labor. We did not have a suitable opportunity to study groups of white and negro women living under comparable conditions, so that we cannot be sure that there is a difference of vital capacity of white and negro

adult females in the older age groups. It is fair to assume, however, that what holds true for the boys, men and girls is also true for the older women.

As these negroes whom we studied were all apparently normal, we believe that low vital capacity is a racial characteristic, and that vital capacity standards which may be applied to white people cannot be directly applied to the negro race. There is a temptation to suggest that there may be a correlation between low vital capacity in negroes and their well known susceptibility to respiratory disease, particularly tuberculosis and pneumonia, but it is obvious that we have no basis for such an assumption.

CONCLUSIONS

1. The vital capacity of the negro race, in both sexes and for all age groups studied, is markedly lower than the vital capacity of the white race. When calculated from surface area, the difference is from 15 to 20 per cent in children, and from 25 to 35 per cent in adults.

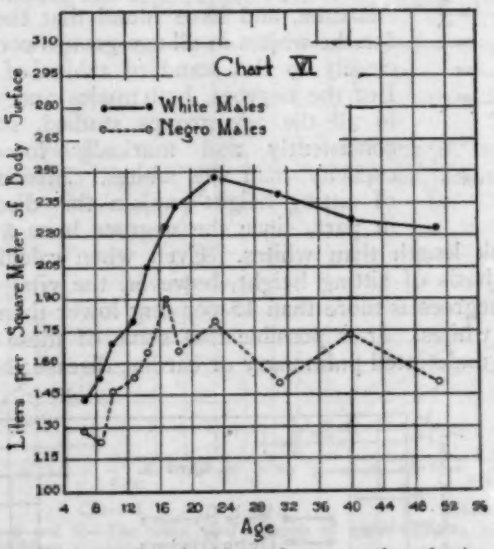


Chart 6.—Vital capacity of white and negro males, showing a consistently lower vital capacity in the negro.

2. The growth curves of weight and of standing height of white and negro children correspond closely, but negroes have a shorter trunk length than whites. When vital capacity is calculated from stem length, therefore, there is less discrepancy between the vital capacity of the two races than when it is calculated from surface area or standing height, the results being only 10 to 15 per cent lower than in the whites.

61 Broadway.

The Now and Then of Quackery.—It has been thought that education of the masses, and of the classes, is the only way of getting rid of quackery; but with all the modern improvements and spread of education there is as much, or more, irregular practice as in the past. That great ability and learning do not prevent such infatuation is shown by many examples in the past as in the present—for example, Sir Kenelm Digby and the "sympathetic powder" (1658), and George Berkeley, Bishop of Cloyne, universally acknowledged to have been one of the most accomplished of men, who, in Philosophical Reflections and Inquiries Concerning the Virtues of Tar Water (1744) advocated tar water as a panacea. The encroachments of irregular practitioners on orthodox medicine are annoying, but, as already said, they will last in some form or another as long as human nature is what it is. —Rolleston, Humphry: *Brit. M. J.* 2:627 (Oct. 9) 1926.

USUAL MAXILLARY DEFORMATIONS*

HARVEY STALLARD, PH.D., D.D.S.
SAN DIEGO, CALIF.

The maxillae, by forming the upper jaw and by bounding portions of the oral, nasal, and orbital cavities, constitute a large part of the face. They articulate with all the other bones of the face, except the mandible, with the frontal, ethmoid and occasionally with either or both, the orbital surfaces and lateral pterygoid plates of the sphenoid.

Since I am not dealing with congenital absence or nonunion of parts, I shall forego any embryologic discussion of the maxillae.

From the dental point of view, the normal complete maxillary structure should have sixteen fully developed teeth, each occluding in the most efficient manner with its opponents. There is no fixed size for a normal dental arch, nor any definitely determinable curves it should have, but all of its features are dependent on (1) the type of the individual and (2) the most favorable environment for full oral development.

As the maxillae develop, so grows the visceral face; but how much they owe their development to chewing no one knows. Well developed jaws sometimes appear in children lacking nearly all their permanent teeth. However, when the teeth are present, their arrangement indicates fairly well the kind of development, although one maxilla may be deformed considerably in one or more of its processes or its body, without effecting proportionately as great a deformity in the alveolar and palatine processes. Often the deformation of the palate is undoubtedly proportional to that of the alveolar processes, but the former may sometimes be cleft without the dental occlusion being much disturbed.

The maxillary dental arch can be deformed in three directions, according to its three courses of growth. It may be (1) narrowed or widened disproportionately; (2) shortened or elongated, and (3) too high or too low in the face. Combinations of these faults, either excessive or diminished growth, produce the great variety of maxillary deformations, usually attended with companion deformations of the mandibles, nasal cavities, and sometimes even of the orbits. Since the orbits finish their growth early, they are not exposed so long to deforming pressures as are the mouth and nose, which grow for twenty or more years. Most maxillary deformations begin after birth, the most grotesque starting at an early age, rarely after the twelfth or fifteenth years; but it does not follow that every deformity of infancy need terminate in the most severe type.

KIND OF MAXILLARY DEFORMATIONS

Contracted-Protracted Forms.—Very often, when only the lateral expansion of the maxillary dental arch is retarded, its length and descent may be increased (fig. 1), as if it had a certain amount of growth energy which it expended in a forward and downward direction when unable to expand laterally. Such malocclusions may be called "contracted, protracted and abstracted" maxillary deformations. There are two main types, the V-shaped and the saddle-shaped (fig. 2). Of the latter, there are some thirty varieties, depending on the character of the deforming objects exerting the pressure. The V-shaped type has fewer

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

variations, owing to the uniformity of the external objects directing their formations. In each kind, the contraction, abstraction and protraction may be limited chiefly to a half of the face constituting the unilateral type of this deformation. Contracted-protracted forms of the maxillae may have considerable attraction; that is, they may stand too high in the face (fig. 3).

Contracted-Retracted Modifications.—The maxillary arch may be prevented from widening and elongating by external forces causing all the upper teeth to shut inside the lower, characterizing the "contracted-retracted" maxillary deformations (fig. 4). In extreme forms, the descent of the maxillae is also often impeded, so that the alveolar and palatine processes are dwarfed in all three directions. These deformations, saddle or V-shaped, bilaterally or unilaterally, are the worst facial anomalies (fig. 5).

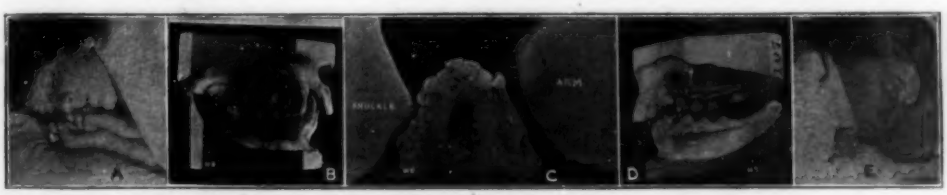


Fig. 2.—*A, E,* right and left pillow habits of a subject; *B, D,* corresponding deformities; *C,* hand and arm casts in cross-section, showing the habitual positions of hand and arm against the jaws.

Distracted-Protracted-Abstracted Relations.—In modern man, only rarely does the upper jaw overdevelop in all three directions. In a type of malocclusion, all the upper teeth are spaced and flared out by the tongue forces accompanying macroglossia. In children or young adults, such deformations are so rare that reports of them have not been clearly recorded; but occasionally individuals are found having expanded and protracted premaxillae which are usually accompanied by mandibular retraction.

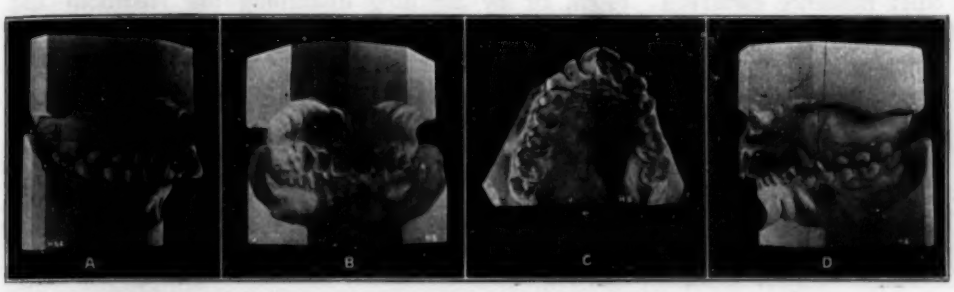


Fig. 1.—Gnathostatic mouth cast (top of which represents Frankfurter's plane) showing a deep, long and narrow maxillary apparatus.

Retracted Conditions of the Maxillary Dental Arch.—The upper jaw may be shortened and not narrowed, as when the upper anterior teeth and their alveolar processes are pushed backward, so that all the upper teeth bite posterior to normal, but with only the anterior ones closing inside the mandibular dental arch. In similar but less severe cases, the retraction is limited to the premaxillae (fig. 6). When external forces are applied against only the anterior teeth, the upper jaw probably widens slightly more than it would otherwise (distraction).

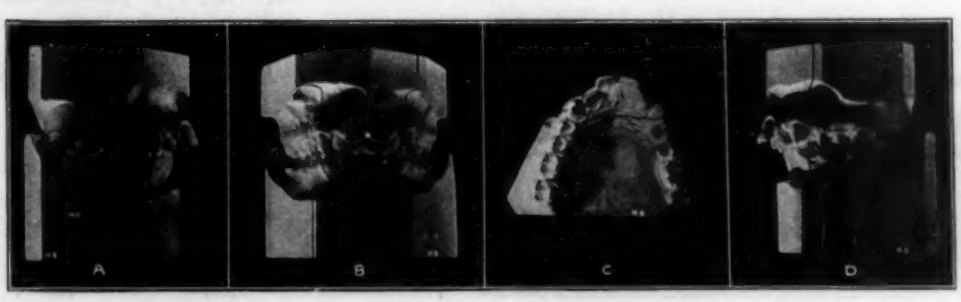


Fig. 3.—Gnathostatic mouth cast showing a shallow, long and narrow maxillary apparatus.

CAUSAL FACTORS

Classification of Causes.—For the sake of clearness, let us classify biologic causal factors into the two most natural categories: (1) protoplastic factors and (2) environmental factors. In the narrower sense, one may be regarded as physiologic factors and the other as the ecologic. The former are the life qualities of a living organism which can respond only directly or indirectly to external stimuli. Such a classification may be used in dealing with either normal or abnormal forms or processes. Protoplastic factors encompass the predisposing, the intrinsic and the metabolic, conveying a more definite and broader meaning than the term "internal factors" suggested by Hertwig. Life reactions, then, are only the responses of an organism to its environmental cooperants or provocatives. This is the best way I can clarify my idea of biologic causes. Unfortunately, etiology has been too often construed to mean merely a single group of factors, sometimes only one, and it is well known among biologists that there is no single cause, predisposing or determining, for any biologic process.

Heredity Determines the Quality of Protoplasm.—Fundamentally, heredity is at the base of all living processes and forms, since every cell must have come from a parent cell; therefore, it must have, in its beginning, the essential chemical and physical properties of its young parent; and, if thrust into a similar environment, it can respond only as its parents did. However, there can be neither pure hereditary characters nor pure environmental characters, for in all cases hereditary factors must cooperate with others to produce reactions capable of determining characters in functions and in forms.

Heredity Factors Lack Fiat Power.—Since all human beings have similar flesh and bone cells in their jaws, all must inherit the ability to develop jaw deformations and, no doubt, all who obtain the improper nutritional factors and the necessary environmental provocatives may succumb. Whether members of one family succumb more readily than those of another,

no one at present knows. More safely may we assume that heredity, lacking fiat power, derives energy from the environment, certain factors of which direct the growth of the life forms.

Endocrine Disturbances.—Since the discovery of how important glandular activities are to metabolism, there has been much speculation on a probable relation between endocrine disturbances and all malocclusion. The fact that they have a profound effect on metabolism, and hence on the reactivity of bone cells, should cause any orthodontist to pause for thought. By causing a large tongue in a small fractional percentage of people, an endocrine disorder may help create the mechanics for larger jaws in addition to predisposing the bones to greater susceptibility for such abnormal alterations. Presumably, the chief influence disturbed endocrines have on malocclusions generally is through their effect on the cellular reactivities predisposing bones to deformations when subjected to natural or unnatural strains.

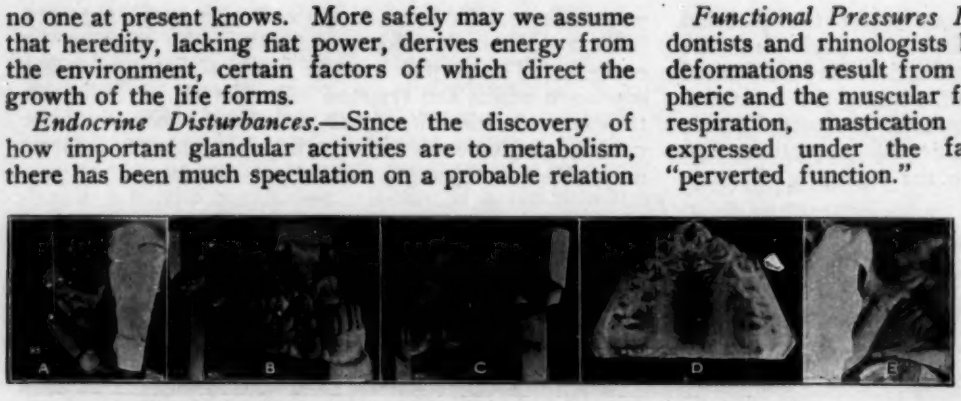


Fig. 4.—Hand-arm pillowing, producing maxillary contraction and retraction.

Deficiency Diets.—Likewise, deficiency feeding, by influencing metabolism and by lacking basic mineral materials, may render bones unduly plastic, or maintain or even increase their original plasticity. In a similar way, the absence of light combined with other unhygienic factors, as infections, unbalanced diets and unfavorable temperatures, may also depress the reactivities of bone cells. The unhygienic factors, to be sure, are environmental provocatives which, in themselves, cannot malmold the jaws but can and do change the protoplastic factors.

PRESSURE FACTORS

Prenatal Pressures.—There are certain objective environmental factors in both prenatal and postnatal life which, if allowed to have pressure contact with the jaws, modify their shapes abnormally. Occasionally a child is born with deformed jaws which some writers attribute to intra-uterine pressures. In rare instances, the jaws are injured by obstetric forces; but it is generally conceded that most children have normal jaws at birth and that most malocclusions develop while teeth are erupting.

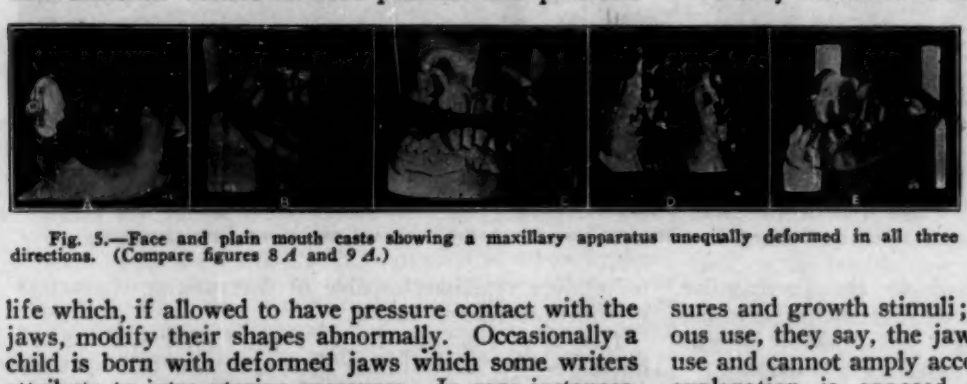


Fig. 5.—Face and plain mouth casts showing a maxillary apparatus unequally deformed in all three directions. (Compare figures 8 *A* and 9 *A*.)

Functional Pressures Improperly Applied.—Orthodontists and rhinologists have generally held that jaw deformations result from such pressures as the atmospheric and the muscular forces derived from perverted respiration, mastication or deglutition, all being expressed under the familiar but indefinite term "perverted function."

Perverted Respiratory and Masticatory Functions.—Angle believes that respiratory perversions, either listless mouth breathing or intense sniffling through partly occluded nostrils, begin the deformations before or about the time the six-year molars are erupting, causing the lower to lock with their opponents either too far anteriorly or posteriorly, depending on the breathing habits of the subject. Such, he believes, merely starts the deformity, which, he assumes, is perpetuated and augmented by the masticatory forces acting on malposed teeth. In elaborating his analysis of the alleged perverted forces, Angle conjectures that malocclusions may be started by a too early loss of a single deciduous tooth, or by anything disturbing the "harmony and balance" of the mouth forces, which, he asserts, are naturally "very delicately balanced." He believes that the jaw deformations are chiefly results of malocclusion.

Fig. 6.—*A*, *D*, simple unilateral retraction; *B*, *C*, retraction with irregular contraction.

Deglutitory perversions, which affect the positions of the teeth, are those manifested in the habits of the tongue and cheeks during swallowing. One habit which, presumably, keeps the bite open is that of thrusting the tongue in between either the buccal or the labial teeth during closure or during the last phase of deglutition (fig. 7). Another habit, believed to open the bite and narrow the jaws, is that of sucking in the cheeks during swallowing.

Lack of Pressure.—Besides the claims based on perverted masticatory and respiratory forces, is that based on a "lack of use" in chewing and breathing. Those holding these tenets believe that most growth of the jaws follows mastication and respiration, which, they say, create greater demands for blood, thereby increasing the trophic pressures and growth stimuli; and where there is no vigorous use, they say, the jaws remain small from lacking use and cannot amply accommodate all the teeth. This explanation is opposed strenuously by Angle, who assumes that modern children use their jaws too much in a perverted condition.

Criticism of Angle's Tenets.—Angle's etiologic explanations show more the influence of the therapy

he has contrived than any scientific investigations of causal factors, and apparently he believes that his intra-oral treatment makes the teeth retrace mainly the course they took in becoming malposed. He could not account for the unilateral forms which are more numerous than the symmetrical forms nor for maxillary deformations unaccompanied by compensatory mandibular deformations, frequent occurrences which clearly cannot be accounted for by any former "functionalistic" explanations. Franke, Cryer and Talbot long ago showed that certain mouth breathers may have little or no malocclusions. Certain persons living on hard foods develop malocclusions. There are many other facts about the shapes of the maxillary deformations which make the foregoing theories untenable, because they are just the reverse of what they should be, if caused by perverted forces of the mouth and throat.

Importance of Pressures.—Since pressures are important in deforming bones, we should consider which kinds are most effective. Pressures exerted by muscular forces are intermittent and variable; those exerted by gravity, when the head is rested by means of the face on some objects, are passive and continuous. The greatest muscular forces are directed endwise against the teeth in opposition to the eruptive forces, and against anatomic structures specifically adapted to resist such. Postural forces are exerted against the sides of the teeth and their sockets, a direction against which there is no compensatory reaction save the natural tendency of the soft tissues to maintain their form which they took when in environments freer from pressures. The former pressures are expended at the pleasure of the individual; the latter continue without his effort.

We have learned from experience how slight forces, when continuously applied, will change bone, particularly when acting against the sides of the organ. It is generally agreed that small, continuous forces from small, tough, elastic wires, never delivering more than a fourth of a pound of pressure, are more effective in orthodontic practice than larger ones intermittently applied. The smaller appliances are less effective when the patient indulges in some form of face pillowing counteractive to them.

It has been found that pillow pressure varies from a few pounds to fifteen or twenty, exerting, respectively, a few grams per square centimeter up to 140 Gm., and may contract the half of the upper jaw of an adult one twenty-fifth inch in four or five hours. Children, after having had years of orthodontic treatment, returning to an arm or hand form of face pillowing, sometimes will contract their jaws to the original conditions, or worse, in two or three weeks.

Fig. 8.—*A*, see figure 5; *B*, common form of hand pillowing; *C*, *D*, effect of bilateral forearm pillowing.

Unless the patient is restrained by some gear, these habits are often repeated with a peculiar fidelity, and the various forms of saddle-shaped arches are merely impressions of the contour of the knuckle, wrist, arm, bottle, doll or shoulder (figs. 2, 8, 9 and 10). The V-shaped retracted-contracted maxillary arch is shaped by a combination of hand and arm (fig. 4). The V-shaped contracted-protracted form is shaped principally by pressure derived from contact with bedding (when the patient lies either on the stomach or on the sides but with the face turned well into the bedding), as in figure 11. In all these cases, mouth breathing will often allow the lower jaw to move away from the object pressing against the upper, and then the weight is concentrated on the upper jaw. On the other hand, in certain patients, most pressure is brought against the lower jaw, deforming it and not the upper (fig. 12). In the contracted-protracted and attracted type, the descent of the mandible has been prevented by the patient resting his chin during the day on propped hands (fig. 13). I have not been able to note or conclude that mouth breathing unassisted by external pressures ever deforms the jaws.

Fig. 7.—*A*, *B*, face and plain mouth cast showing lateral tongue-biting habit and effect; *C*, *D*, face and plain mouth cast showing terminal tongue-biting habit and effect; *E*, gnathostatic mouth cast of a patient having similar habit.

In certain sitting postures the face is rested against propped hands, which may narrow, shorten or push the jaws to one side of the face (fig. 14).

Fig. 9.—*A*, see figure 5; *B*, asymmetrical maxillary contraction from pillowing as in *C*; *D*, arm casts in cross-section showing positions of arm against jaws in sleeping bilaterally as in figure 2 *E*.

No doubt, the effect of these pressures would be less significant if the child never had prolonged plasticity through malnutrition or through disease, both of which we seem unable at present to prevent. However, it seems impossible to have the highest oral development in a person exerting habitual pressures against the face, no matter how hygienic his surroundings or how perfect his food and inheritance might be. Physicians

need not be reminded that the posterior part of the cranium is often flattened disproportionately in primitive peoples who swaddle their infants or in modern children who sleep on their backs or whose heads have been malmolded before or during birth.

Related Nasal Deformations Accompanying Maxillary Contractions.—Since the exactitude of occlusion is so definite that it has taught me the importance of external pressures, I have naturally surmised that they also affect the shape and volume of the nose. It would be only natural to conclude that any pressure constricting the maxillary apparatus would also narrow the nasal cavities. In studying the faces of subjects, I have noticed that, in unilateral malocclusions or in asymmetrical bilateral forms, the external nose slants toward the more normal side of the face and away from the pillowed side; that the narrower nostril is on the side receiving the more pressure; that the alveolar process on the narrowed side often descends more, and that the septum is deflected toward the narrower nostril. I have also observed that, in those subjects having contracted-retracted maxillary arches, the nose has not been allowed to descend properly, it is short, it is unequally narrowed, and the septum is sigmoid. Others have noted that, in the contracted-protracted maxillary arches, the nose is narrowed and "fattened" between or slightly below the level of the pupils, a deformation often attributed to adenoids. Since subjects having their maxillary dental arches contracted and protracted and their mandibular retracted are persons who have slept from infancy on the stomachs and rested the face in the bedding while breathing through the mouth, I am beginning to suspect that the "fattened" nose is also partly a result of external pressures which have narrowed and bunched the bridge and the soft tissues.

Fig. 10.—Other common forms of hand pillowing and their effects on the maxillae.

Fig. 12.—Various unilateral mandibular contractions from pillowing like that in *A*.

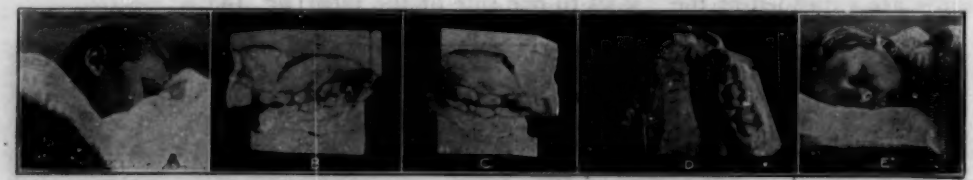


Fig. 11.—Effects of face pillowing indulged from infancy.

History.—Trendelenburg was first to record that deformed noses accompanied high-arched palates. Shaus noted that the smaller half of the maxillary arch is accompanied by the narrower nostril, and that the longer alveolar processes are on the side to which the nasal septum deviates. Freeman believed that faulty development of the maxillae caused deviated septums, particularly in the dolichocephalic. Talbot has shown that deflected septums will sometimes occur in persons having normal occlusion, but has confirmed the assertion that deviated septums always occur with high and irregularly contracted palates. Talbot also, in reproducing the illustrations of Zuckerkandl and his own, has shown that the deviation is toward the narrower nostril and away from the hypertrophied turbinates. He believed that the deviations were due either to trauma or to the mechanics of unbalanced respiratory forces, those produced by breathing chiefly through a single nostril.

Unfinished Work.—I believe that we should study in young adults the nontraumatic septal deviations and the asymmetrical noses, comparing them with the malocclusions and the postural habits of the subjects. A study should be made of the size, health and drainage of the sinuses, particularly the maxillary, in connection with the asymmetrical forms of malocclusion and their corresponding causes, the more normal sides being used as a check. The malocclusions should be reproduced for examinations in gnathostatic models which show quite well the abnormal deviations of the jaws and teeth in each of the three directions. In order to compare and record the congestion of the two sides of the face, in unilateral deformations, the roentgenograms should be accompanied by photographic records of the faces transilluminated with powerful but cold lights. I have often surmised that the deflection of the deviated septum points into the narrower nostril partly because the maxilla of that side has been narrowed and the median line of the upper jaw carried far toward the opposite half of the face. Had pressure been exerted alternately and equally on the two sides, both nasal chambers would probably be narrowed alike, their floors lowered simultaneously and equally, their corresponding alveolar processes equally lowered, and the septum straight. I also suspect that the drainage of the sinuses on the pillowed side is retarded by gravity and by the mechanical constriction of the nasal chamber which, together with congestion, occlude the nasal passageway. The proposed study, at least, seems promising and, to the common facial deformations, is an approach similar to that made by physicians in study of deformations elsewhere, particularly in the cranium, chest, spine and shoulders.

CONCLUSIONS

This etiologic view of general malocclusion has never before been presented. There is no single causal factor

for any malformation, but, generally speaking, the malprotoplastic factors provide poor growth and the abnormal pressures misdirect it. This explanation of malocclusion is the only one to coordinate all the known etiologic factors. It accounts in a simple way for the great variety of saddle and V shaped dental arches, and for the unilateral and the asymmetrical jaw deformities, which outnumber many times the bilaterally symmetrical forms. It also accounts for deformities confined to one jaw or to one side of one jaw, and for such compensatory developments as elongations accompanying contractions, or the converse, for attraction and abstraction relative to the ear-eye plane (Frankfurter plane), and for the lack of deformations in certain rickety children or mouth breathers who assumed no harmful postures during habitual rest.

Fig. 13.—Chin propping, which face pillowers often practice in the daytime, producing premaxillary and mandibular retraction.

247 Spreckels Building.

ABSTRACT OF DISCUSSION

DR. THOMAS E. CARMODY, Denver: The author seems to think that mouth breathing or inflammations about the nose or throat have very little to do with these deformations. I do not think he can prove that the pillowing on the arm or hand has anything more to do with it than mouth breathing. There is a possibility that we have both. The plastic conditions of the face of small children can be changed very easily, with regulating appliances, by means of pressure in the nose, or by a number of things. From his pictures I judge that a number of those that are pillowed on the hand also have the nostril closed on that side. In a number of intumescent rhinitis cases the side that is down is congested; it is the side in which there is little breathing space, and therefore deformity. Nor do the two sides develop the same. His skulls all show flattening of the back of the head. If all patients slept on the back of the head, that might have something to do with it. We know also that inflammations of the throat after a few hours will allow a change in contact of the inclined planes of the teeth so that the teeth occlude in one position normally, and next day the occlusion may be changed remarkably. In the rotation of the teeth, pressure from the teeth themselves has something to do with the formation of the jaws. We know also from the work of Dean and Daniels on food values that the vitamins in foods have a great deal to do with the development of all body tissues. A great many people stand on one foot more than the other, and yet we do not find that one leg is shorter than the other. When regulating appliances are removed from teeth, the teeth spring back into their abnormal position, not because of pressure, but because no new bone has formed behind the teeth. If there is negative pressure in the nose, and 15 pounds to the square inch in the mouth, the result is a high arch. That does not necessarily mean that that is due to negative pressure entirely. It may be pressure on one side or the other; it may be muscular pressure. There is action of muscular pressure when the mouth is open, causing narrowing of the arch, and there is muscular action on the mandible as well as on the maxilla. If there is a deformed mandible, there is a deformed maxilla, and that may be due to the lack of support of the mandibular teeth on the maxillary teeth, or the reverse.

DR. GREENFIELD SLUDER, St. Louis: One thing surprised me—the statement that mouth breathing in itself will never deform the jaws. In a monograph on diseases of the nose written by H. Lambert Lack in 1905 is an exposition of a most plausible theory about the effect of mouth breathing on deformation of the jaws. The crucial point is the emphasis on what is normal. In the normal person, the muscles that close the jaws are stronger than those that open them, resulting in a closed mouth in sleep. This is the pressure of the lower alveolus on the upper. The muscle mass of the tongue is elastic, and exerts its pressure laterally when the mouth is closed. Because of nasal obstruction in sleep, the pressure which is exerted by the lower alveolus is lost on the upper, and permits the upper to descend more readily in growth. The lateral pressure of the muscle mass of the tongue is also lost, which permits the tension of the cheek to exert a gentle but constant pressure inward, resulting in an inward and downward descent of the upper alveolus; that is, a heightening of the palatal arch. The pressure of the cheek compresses the alveolus until it assumes a V shape, resulting in an open bite and malocclusion of the teeth. This is a most plausible theory, and certain it is that neglected cases of mouth breathing usually result in deformed jaws. There are exceptions, of course, as in every other surgical situation. I know one case of congenital bony occlusion of both choanae which has been a total obstruction throughout life, and yet there is no deformity of this person's jaws at the age of 50.

DR. EUGENE R. LEWIS, Los Angeles: We were taught years ago that the degree of abnormal negative pressure was practically the only factor that determined departure from the normal in type of jaw of the mature person. There are surely many items that enter into this determination. I have seen two children, aged 4 years and 8 years, respectively, the former with complete posterior atresia of one nostril and the latter with complete posterior atresia of both nostrils. In neither of these children was there any malformation whatever of the jaws. That compels us to revise some of these negative pressure notions. Dr. Shurly brought out an important point which has a bearing on this subject—the vitamin balance during the formative period. The work of Lamb and Evvard at Ames has shown a tremendous variability in animals of the same litter that have just been subjected to certain vitamin variations. There is a great deal of value in what Dr. Stallard has presented, but I think no single factor determines the conformation of the jaw.

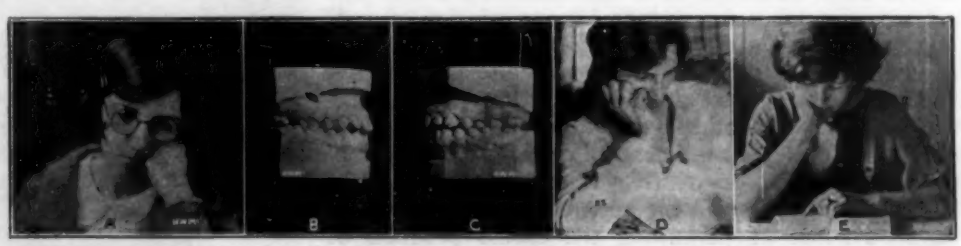


Fig. 14.—Other forms of daytime face propping. *A*, *B* and *C*, from H. W. McClain, D.D.S.

Negative pressure, the habits in repose, the condition of the tissues at the time of their greatest plasticity, the nutrition with respect to vitamins, racial and family types, and many other influences enter into this determination.

DR. HARVEY STALLARD, San Diego, Calif.: I was taught to believe that all mouth deformities were due to perverted functions and that mouth breathing, by disturbing the muscular balance, was the chief primary factor. I do not know how any one could prove that mouth breathing causes a change in intercusping of molar teeth, particularly in unilateral forms of malocclusion. I have found a great many mouth breathers with quite normal mouths, especially some asthma patients. One might postulate that these children never had a deficient diet, but the fact remains that they are mouth breathers with nearly normal faces and mouths. In my paper, I suggested that the deformation of the nose on the habitually pillowed side is partly the result of the external forces. Rickets was formerly supposed to be the chief cause for maxillary deformations, but many rachitic children, I have found, have normal faces, but flattened occiputs with prominent parietal tuberosities. I agree with Dr. Lewis that, if we could control internal factors, if we could insure the child proper diet and keep him immune to diseases, we would not need to heed his sleeping postures. The greatest objection I have to the theory that perverted forces of the jaws cause malocclusion is the fact that most malocclusion is markedly asymmetrical, which cannot be explained by mouth breathing. All authors who claim that malocclusion is due to perverted functions have usually selected for their illustrations symmetrical forms of malocclusion.

HEMORRHOIDS *

J. RAWSON PENNINGTON, M.D.
CHICAGO

At the Ohio Valley Medical Association, just ten years ago, I [1] proposed a new classification of hemorrhoids into infective and noninfective groups, based, of course, on the relative virulence of the infection in the pile tumor. Since all examples are actually or potentially infective, I shall limit my remarks to this type, premising that it is essential that the focus be extirpated.

The section reproduced in figure 1 is from the stump of a hemorrhoidectomy done by one of the "closed" methods; bacteria and a round-cell infiltration can be seen in the field. This patient was supposed to have "ulcer of the stomach," and was to have a gastroenterostomy performed; but the gastric symptoms promptly subsided after removal of the pathologic condition and provision of free drainage. A crater-like opening can be seen in the apex of the field, evidently nature's mode of permitting the excess products of infection to escape. The same must hold good for other "closed" operations when the infection is virulent enough, or of the type to need such a vent, and I am told by fellow surgeons that the scar after clamp and cautery operations frequently opens.

If the infection is of low grade or only of the toxemia producing type, such an infected base may continue to smolder, giving off toxins which continuously poison the system, occasionally with dire results, the same as from an infected tooth or tonsil. (It is passing strange that focal infection from the rectum or anus is seldom or never referred to in the myriads of articles on this subject of late years. For a long time I [2] have insisted that the lower bowel is nearly as frequent a site of the foci as is the opposite end of the gastrointestinal canal.)

Total removal of the infected base (or destruction of the infective agent in situ), and good drainage is very essential. Simply removing the top of the mass, sealing in the infected base, and leaving nature to open the eschar for escape of the infection is certainly not good surgery. Hence, twenty-six years ago, after a thorough trial of the ligature, and of the clamp and cautery methods, I devised my "open" operation by total excision, which has given complete satisfaction after use on several thousand occasions. The untoward results, such as severe pain (especially during defecation), loss of control, stricture, abscesses, fistula, exuberant cicatrices, ectropion and recurrences, encountered after other plans, have one and all been notably absent. Moreover, the stay in hospital, instead of being from one to three weeks, is reduced to from one to three days.

The principal causes of the hemorrhoidal condition are predisposing (embryologic and mechanical) and exciting (bacterial). The embryologic causes are the anorectal diverticula referred to in my book.[3] The mechanical are those conditions interfering with the return flow of blood, and producing dilatation of the vessels. Although retarding the blood stream may not, of itself, cause an inflammatory condition of the vessel lining—which is necessary to thrombosis—yet dilatation favors thrombosis by aiding the entrance of bacteria.

That bacteria—the exciting cause—either directly or through their toxins produce thrombosis has been definitely proved, and clinical experience shows that thrombosis is encountered most frequently in those veins which are most exposed to infection by reason of their location.

I have said that the anorectal crypts or diverticula were predisposing factors. Figure 2 shows a longitudinal section of the anorectal region. The large crypt opens on the surface of the anal canal, and the two diverticula extend from this crypt through the internal sphincter fibers down to the longitudinal tunic. This illustration is selected from those of Hermann,[4] nearly half a century old.

Figure 3 presents a section through the anorectal region which I obtained from a stillborn child at term. There is a striking resemblance between this picture and the one from Hermann. As in the latter, the large crypt opens on the surface of the anal canal, and the diverticulum extends through the circular fibers down to the longitudinal ones. This is a normal anorectal diverticulum. Such crypts or diverticula give off toxins secreted by the bacteria which have been caught in these traps.

The circles in the schematic diagram (fig. 4) indicate the alpha and omega of the alimentary tract. They are two of the most important points, if not the most important, of focal infection in the body.

The fusion and morphogenesis of the omega intestinalis region give rise to numerous crypts and diverticula, which, as stated before, serve as catch-basins for bacteria. Here toxins are given off, which aid in producing irritation and congestion to be followed by inflammation and their entrance into the tissues. Now,

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Pennington, J. R.: Tr. Am. Proctologic Soc., 1916, p. 38.
2. Pennington, J. R.: Illinois M. J. 39: 229 (March) 1921; S. Clin. N. Amer. 5: 923 (Aug.) 1925.
3. Pennington, J. R.: A Treatise on the Diseases and Injuries of the Rectum, Anus and Pelvic Colon, Philadelphia, 1923.
4. Hermann, Gustav: J. de l'anat. et de la physiol., July-August, 1880.

since drainage of this area is systemic, portal and lymphatic, it should go a long way toward establishing this region as one of the most important, though subtle, fields of focal infection in the body, another and potent reason for my "open" method, which removes the source of local infection and in turn prevents infection from extending to the system at large.

A hemorrhoid is a tumefaction produced by a tumefying agent. The incipient tumefacient is the dilated blood vessel, and may begin in a capillary, venule or vein, and spread to other like vessels. The underlying cause of the tumefacient may be predisposing or exciting, or a combination of these. Beginning dilatation of the hemorrhoidal vessel is incipient tumefaction—hemorrhoidosis. This causes the corresponding elevation or swelling of the mucosa and submucosa, and the combination forms an incipient tumefaction. It matters not what the original cause may have been. It is known that if the tumefacient, which consists of the dilated vessels, and the hyperplastic tissues surrounding them, is injected with phenol (carbolic acid) or quinine and urea hydrochloride, or is subjected to electrolysis, it may be obliterated; then tumefaction may disappear.

After more than a third of a century of clinical observation, I am of opinion that we have given more attention, relatively, to the tumefaction of the hemorrhoids than we have to the tumefying agent. We forget that the former is simply the external expression of the underlying cause, or tumefacient. The efficient treatment of any condition depends on the cause, duration and severity of attack, and the condition of patient. Hemorrhoids are no exception to this rule. Their

Fig. 1.—Stump of hemorrhoidectomy after "closed" method, showing bacteria and round-cell infiltration. There is a crater-like opening in the upper right hand corner from which infection can escape. (From Pennington's "Treatise").

treatment, then, consists in removing the cause (or tumefacient) and adjusting the covering of the tumefaction, and not in simply removing the tumefaction, and trying to suppress the cause.

All the accompanying illustrations are from patients and specimens, with one or two exceptions. Since such conditions exist, we should employ that procedure which most completely removes the tumefacient, adjusts the covering of the tumefaction, and gives the best drainage. Surely no one will even claim that such a method will be found in the ligature or the clamp and cautery technics. Both of these are archaic, attended by a trauma that is unsurgical as well as unscientific. The correct plan must be that one, as just stated, which opens the tumefaction and removes the tumefacient while adjusting the covering of the tumefaction and providing for drainage. That method is and can be none other than my "open" one, which has four distinctive features: 1. Exposing the operative field by

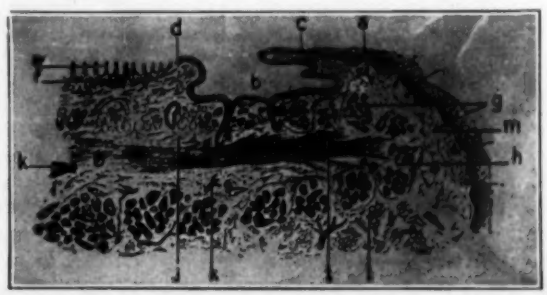


Fig. 2.—Longitudinal section of anorectal region through the junction of the viscera and the body wall: *a*, smooth cutaneous zone; *b*, depression of anal mucosa; *c*, anocutaneous line; *d*, anorectal line; *e*, mucosa and glands of rectum; *f*, muscularis mucosae; *g*, inferior portion of internal sphincter; *h*, external sphincter; *i*, longitudinal muscular layer; *j*, cellular tissue between this layer and internal sphincter; *k*, *k*, vessels and nerves; *l*, adipose tissue in ischiorectal fossa; *m*, pilosebaceous follicles. (Hermann.)

aid of four triangular forceps. 2. Opening and removing a section of, and adjusting the tumefaction. 3. Removing the tumefacient. 4. Drainage. Formerly, my triangular forceps were attached to the anterior-posterior and both lateral quadrants. Now, I place them on the left anterior lateral quadrant, left posterior lateral, right anterior lateral, and right posterior lateral quadrants (fig. 5). This offers a better exposure, and one is less apt to wound the midline anteriorly and posteriorly. While I have always tried to avoid this, it was not until I changed the position of the forceps that I realized the ease with which this trauma could be prevented.

It cannot be gainsaid that my "open" operation is the simplest, safest and most scientific. The technic for exposure of the field by its aid is the only one that does so completely. As I have shown in my book, hemorrhoids "are located on the inner side of—and project into—two similar, hollow, flexible, distensible, collapsible, sensitive and musculovascular cones." It does not require a scientific mind, then, to see that *vis a fronte* traction made on a hemorrhoidal tumor so situated, necessarily pulls into the field more of the covering (mucosa and submucosa) than is necessary for radical removal. Nor does it require a skilled technician to see that by everting the pile tumor, and making *vis a tergo* pressure the covering of the tumor is placed under tension, and when a small opening, a mere incision is made in it, the hemorrhoidal mass or varicosity will protrude and can be radically removed through this trivial opening (fig. 6). While after such removal no tissue is left under stress, the operation is more radical, and the patient has less pain and convalesces earlier; in addition, the end result is far more satisfactory than that of any procedure which leaves the tissues under stress, or endeavors to unite them under tension after the mass is removed (fig. 7). This statement is based on many years of clinical observation, and on facts which any fair minded surgeon must and will acknowledge to be true.

What is it that keeps the patient in bed from ten to twenty-one days after an operation by the ligature and other closed methods, when my "open" operation requires only from two to five days? Infection. What is it that makes painful skin tabs? Infection. What is it that makes the edges of the wound so tender? Infection. What is it that makes redness and swelling of the wound? Infection. What is it that causes the stench? Infection. What is it that prolongs convalescence? Infection. Why does the patient operated on by ligature have to remain in bed ten or more days, and only from two to five days after the "open" operation? In the former, the tissues are held under stress and traumatized; so infection is driven in, while drainage is poor; in my "open" method, the trauma is slight, no tissues are under tension, hence no infection is forced in, and drainage is good.

Pain

	Severe	Moderate	Slight
Clamp and cautery	0%	30%	70%
Ligation	10	57	33
Whitehead	16	56	28

I wish now to refer to some complications to be feared after the ligature and the clamp and cautery operations. (The Whitehead plan deserves little attention, for it seems to be rapidly becoming a thing of the past.) First, as to pain: During his service as a house-surgeon at St. Mark's Hospital, London, Anderson [5] tabulated 150 ligature, 100 Whitehead and fifty clamp and cautery operations. He admits that the personal equation plays a great part as regards pain, but makes a triple classification: Severe, needing more than one-fourth grain (16 mg.) of morphine; moderate, one-fourth grain is sufficient; slight, needing little or no opiate.

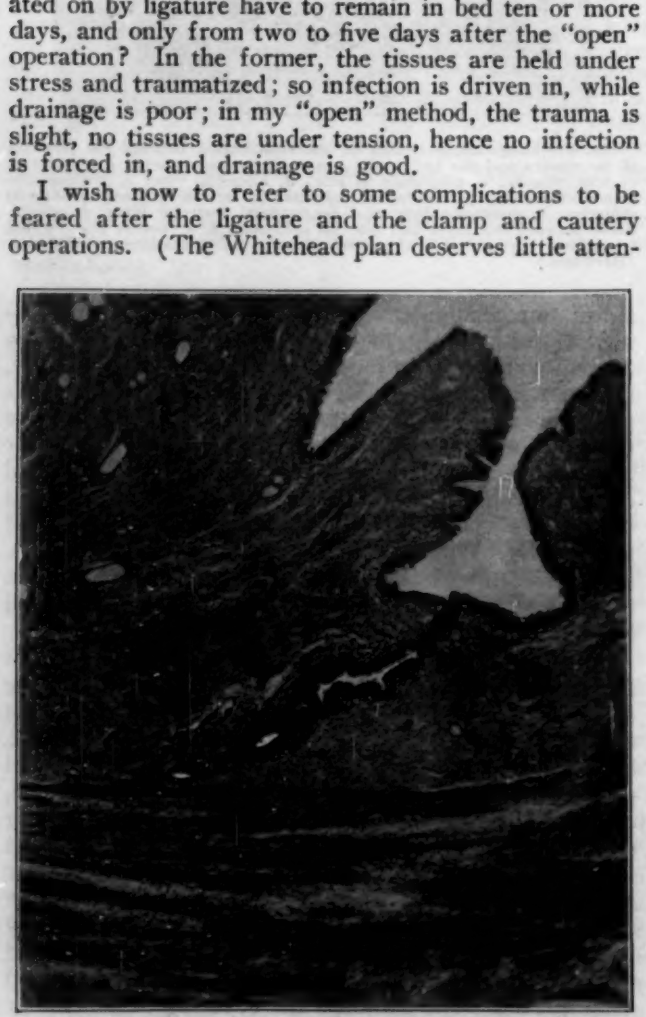


Fig. 3.—Section through anorectal region of full-term child. The striking resemblance to figure 2 may be noted. Large cryptodiverticulum opening onto surface of anal canal, and extending down through circular fibers to longitudinal ones. (From Pennington's "Treatise").

After the ligature operation, there is a great deal of pain Miles [6] states, and it is important to relieve this as quickly as possible. Accordingly, a hypodermic of one-half grain (0.03 Gm.) of morphine is administered as soon as the patient is back in bed. Then a sedative mixture containing opium is given in four hours, and repeated every four hours for the first twenty-four, every six for the second twenty-four, and every eight during the third and fourth twenty-four hours, until bedtime of the fourth day, when aperients are taken.

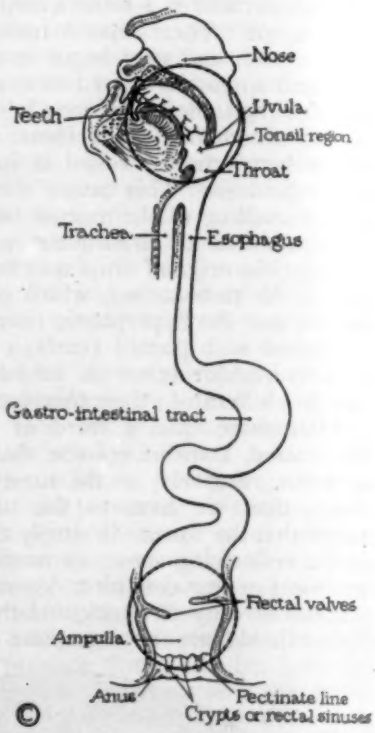


Fig. 4.—Schematic diagram showing alpha and omega of alimentary tract; two of the most important, if not the most important, points of focal infection.

The patient is kept in bed till the fifteenth day; on the nineteenth the pile wound will have healed and on the twenty-first he is allowed to go home. To this lengthy and complicated procedure my "open" method forms a startling contrast. I see very clearly why by Miles' plan it takes three weeks for the patient to get rid of the infected focus with its pent-up microbes. He states that the sloughs separate on the ninth or tenth days, usually without pain; in a day or so the digital divulsion is begun, to which I shall return shortly.

In Anderson's series of 300, there were eight instances of postoperative hemorrhage. Since his essay, another series from the same institution, but larger, has been analyzed by Gabriel.[7] He terms all bleeding within twenty-four hours intermediate, and any over that interval secondary. Accordingly, he tells us that in 408 ligation operations there were two intermediate, six slight secondary and five severe secondary. In eighteen clamp and cautery operations there was a single example of slight secondary bleeding, while in twelve done by the Whitehead plan there was another instance of intermediate hemorrhage.

After my "open" operation especially there is less liability to stricture, which has too often been a sequel to ligation, clamp and cautery, and, of course, the Whitehead more particularly. Miles evidently had this possibility in mind, for he directs that on the twelfth day the index finger should be inserted to find if all the sloughs have separated, also to smooth out the granulating surfaces. The purpose of this digital

5. Anderson, H. G.: Brit. M. J., Oct. 30, 1909.

6. Miles, W. E.: Brit. M. J., Jan. 29, Feb. 19, 1910; Surg. Gynec. Obst. 29: 467 (Nov.) 1919.

7. Gabriel, W. B.: Lancet 2: 121 (July 17) 1920.

exploration, which is to be repeated every day until the nineteenth day when healing is complete, is to prevent adhesion of the granulating surface. Anderson writes that there were no strictures in his fifty clamp and cautery operations, some in thirty of 150 ligature cases, though overcome by digital dilation, and that in eight others the contraction was so marked that instrumental dilation was needed for six weeks.

A few years ago, Sir C. Gordon-Watson [8] stated that in 560 consecutive operations at St. Mark's Hospital, nearly all (536) were performed by the ligature plan; fifteen clamp and cautery, and nine by the Whitehead method. There were two deaths from bronchopneumonia. There was a trifle more than 10 per cent (fifty-eight cases) of "constrictions"; and there were fifty-two cases of tags, six of fistula, five of secondary hemorrhage, two of submucous abscesses, and one of fissure.

Regarding the stay in hospital Anderson states that the average was ten days for clamp and cautery, twenty-one for ligature, and twenty-six for the Whitehead method. At the Mayo Clinic, according to Buie,[9] the patient remains in bed for four days. Digital examination is made occasionally during the second week, and the patient can be dismissed permanently in from twelve to sixteen days. At the French Hospital (London) Rowe [10] makes use of a triple affair, "a combination of excision, ligation and suture." After a week of restricted diet, the last two days in bed, if possible, on milk diet alone, the operation is performed; then the patient remains in bed for ten days, in his room for four days, and he should spare another week for convalescence if possible, or, as Rowe adds, a total of twenty-one days. Even for palliative treatment for such subjects as decline more radical measures, a week in bed is advised.

Contrast all these with the three or four days' sojourn necessary after my "open" operation. Instead of the from three to seven days' preoperative stay in bed on light diet necessitated by the plan of Miles and

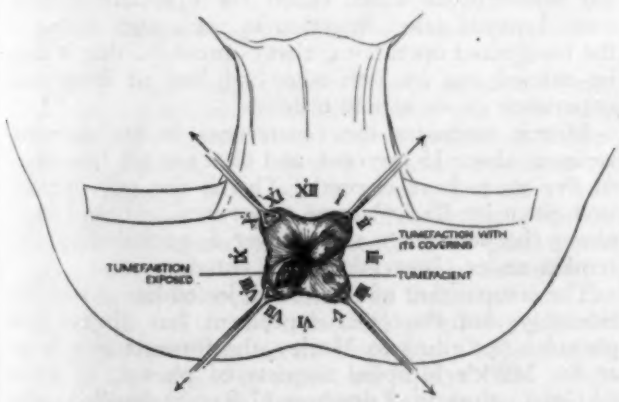


Fig. 5.—The improved positions for application of forceps.

others, I have operated in my office with no other preparation than cleaning of the operative field, and rendering it insensitive by some local anesthesia; and the patients have walked out with no further ado.

I am thoroughly in accord with Morley,[11] who, in the course of his article recommending the injection method, writes: "I know very well that when medical men suffer from hemorrhoids they prefer injection to operation—if they have ever heard of the former—and I have had no more grateful patients than the many doctors I have treated. They admit when it comes to their own turn, *they* cannot afford to lie up, and that their experience of operation on their patients makes them dread the first few days after an operation on their own piles. And who, I would ask, from a

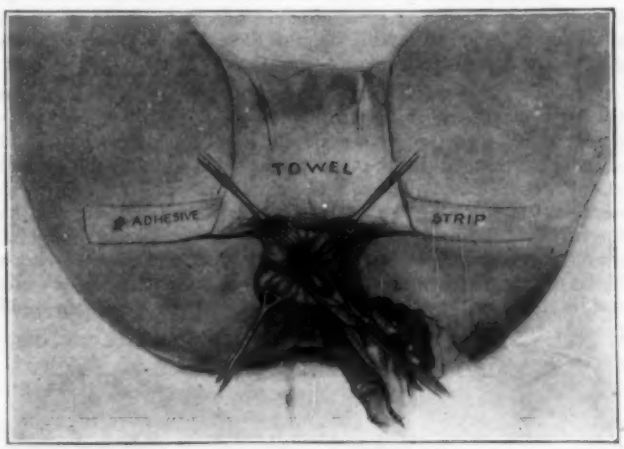


Fig. 6.—By making a trivial incision in pile tumor after vis a tergo pressure, the hemorrhoidal mass will protrude and can be radically removed.

cabinet minister downward *can* afford to lie up in these times, if there is any way of avoiding it?"

I would add, is it any wonder the charlatans reap a rich harvest by their advertising matter "No knife," "No stay in hospital," "No interference with work or business"? I estimate that about 10 per cent of the patients referred to me have been previously operated on (often two or even three times) by one or another of the closed methods. Hence, the adverse propaganda by both physicians and the laity have deterred many a patient suffering with this affliction from being operated on, and have caused others to conceal the fact that they have hemorrhoids. This is doubly unfortunate—for the patient because of continued and unnecessary ill health, and for the physician because of the loss of a client.

To prove that my "open" method is possible under very adverse conditions, I shall cite a few case histories, though they could be multiplied indefinitely.

REPORT OF CASES

CASE 1.—I was requested by a leading Chicago surgeon to see a case of hemorrhoids, complicated with an acute and profusely discharging bartholinian abscess and a recto-labial fistula. The entire field was bathed in pus. The surgeon said to me, "Your operation, because of the great amount of pus present, is not applicable in a case of this kind," adding that "because of so much pus in the field, the cautery was the only safe method."

He then used the clamp and cautery method for removing one of the hemorrhoidal masses. On removal of the clamp, the charred field began to bleed; in applying a ligature, he broke it open at another point, from which bleeding also occurred. In an attempt to ligate this point, the field began to bleed from another. Four or five ligatures were applied before the bleeding was controlled. I was then asked, to my surprise, if I would complete the operation, which I did by my "open" procedure. Three days later, notwithstanding the pus-covered field, there was no redness, swelling, skin tabs or pain in that part of the field in which the Pennington operation had been employed. But there was edema, swelling,

8. Gordon-Watson, Sir C.: The Operative Treatment of Hemorrhoids, Brit. M. J. **2**: 593 (Oct. 15) 1921.
9. Buie, L. A.: Ann. Surg. **82**: 964 (Dec.) 1925.
10. Rowe, R. M.: Lancet **1**: 1225 (June 16) 1923.
11. Morley, A. S.: Practitioner **108**: 403 (June) 1922.

pain, tabs and tenderness where the clamp had been used. The edema, swollen skin tabs, pain and slow healing in that part of the field where the clamp and cautery had been used made it necessary for the patient to remain in the hospital thirteen days; otherwise, she could and would have left on the third day.

Case 2.—A patient was operated on for what seemed to be an ordinary type of hemorrhoids and cryptitis. The operative field was inflamed and infected, with pus discharging from three small points, evidently diverticula. Had the infection there been pent up by some method of closure or sealing in, the patient unquestionably would have had serious trouble. As it was, he was discharged in ten days.

Case 3.—The clamp and cautery operation was done on this patient by a well qualified surgeon. The patient evidently had infective hemorrhoids, for in a few days an abscess developed in the operative field which was opened under general anesthesia, and seven more operations were necessary before he was able to leave, about four months later. He had to return in a few days for another two months' stay. A year ago, he came under my care, and I operated on him for some postoperative fistulous tracts and sinuses. His condition since has been very good, and he has gained 15 pounds (6.8 Kg.).

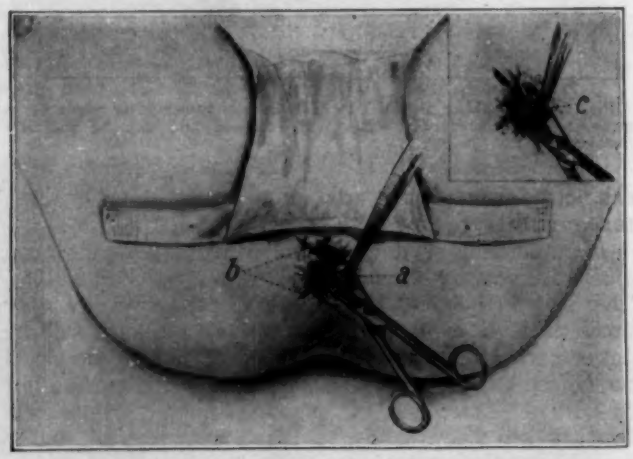


Fig. 7.—Method of removing external hemorrhoid: *a*, excising section of skin; *b*, pulling tumor mass through skin incision and removing it; *c*, the result—a simple slit in skin is left.

Case 4.—A man, aged 39, consulted me for prolapsed internal hemorrhoids, which had been strangulated for forty-eight hours and were gangrenous. The patient had had hemorrhoids for more than a decade, yet had repeatedly declined operation because he had two friends with incontinence of feces as a result of the operation; he was told that the operation was painful, that the pile tumors would recur, and so on. He submitted to operation willy-nilly, and in an attempt to cleanse the field the necrotic mucosa sloughed off. Yet he left the hospital on the fifth day. At this time, there was no edema or swelling, the incisions pointed toward the center of the bowel, and the mucosa in the midline in front of and behind anus were intact. On the seventh day he was able to attend to his business.

COMMENT

After my "open" operation, the next best procedure, in my opinion, especially for internal hemorrhoids, is either the injection plan, or treatment by electricity (fig. 8). For the external type, the plan is excision under local anesthesia, and the dressing of the wound with rubber dam, gauze and a T-bandage. (Surely no one would think of applying the ligature or the clamp and cautery to the latter class.)

While my experience with injections and electrolysis is limited, I am, of course, familiar with the technic and describe it briefly for those who wish to employ either one. These methods have many points in common: Both require a needle to puncture the covering of the tumefaction-mucosa and submucosa. In one, the needle is solid, in the other hollow. One carries a fluid; the other, electric current. Both deposit their therapeutic properties beneath the covering of the tumefacient, where they act on the tumefying agent or agents.

The advantages of these methods are that they can be made use of when the patients refuse more radical measures. As no general anesthetic is administered, there is no postanesthetic disturbance, such as vomiting. There is no pain. Patients are not confined to bed; hence, they lose only a few hours from work or business. Relief is immediate, and there is steady improvement. There is little or no risk from the injections themselves or the electricity; and, in skilled hands, no danger of complications. Neither is suited for irreducible, strangulated or sloughing hemorrhoids, nor for cases in which the situation is complicated with fissure, fistula or ulcer. In this country, it is estimated by advocates of the injection plan that not more than one-half the cases are suitable for these methods.

In the past, injections were looked down on because of the advertising proclivities of their sponsors, but for years past they have been habitually resorted to, especially abroad. They command respect if for nothing else than the sheer weight of numbers. Martin states that more than 4,200 patients were treated by his father and himself. Murphy[12] of England used phenol injections "several thousand times" with good results. Fansler,[13] in about 1,200 injections of quinine and urea hydrochloride, had a few instances of superficial sloughing, three of these with secondary hemorrhage, but the end results were uniformly good. Morley, in nearly 4,000 injections, had but a single instance of thrombosis. Lastly, the English proctologist Edwards[14] states: "As an advocate for this method, I cannot put it stronger than by saying that if I were the subject of uncomplicated, reducible, internal hemorrhoids which called for operative interference, I would select injection in preference to any of the recognized operations, always provided that it could be carried out by one who had had at least some experience of its simple technic."

Martin estimates the recurrences in his enormous series at about 15 per cent, and then not till from three to five years have elapsed. This is the same proportion given by Back[15] some time since. Humphreys[16] places the percentage at not over 5, provided subjects remain under observation until cured.

The composition of the fluid injected has varied considerably, but the chief ingredient has always been phenol. According to Morley, the formula now in use at St. Mark's Hospital consists of phenol, 48 grains (3 Gm.); glycerin, 2 drachms (7.5 cc.); distilled water, 2 drachms (7.5 cc.), or a 20 per cent solution. From 2 to 8 minims (0.12 to 0.5 cc.), according to size, is injected into each mass through a needle $^{36}/_{100}$ inch long. The patient is allowed to go home but is cautioned to replace the hemorrhoids at once should any prolapse occur, otherwise strangulation and sloughing might ensue. When a sufficient quantity has been injected, the mass turns white, and the needle is then withdrawn in a moment or two. According to some, it is best

12. Murphy, P. K.: Brit. M. J., April 19, 1922.
13. Fansler, W. A.: Minnesota Med. 7: 720 (Nov.) 1924.
14. Edwards, F. S.: Practitioner, March, 1915.
15. Back, Ivor: Practitioner, March, 1915.
16. Humphreys, G. A.: Am. J. Surg., March, 1913.

to treat only a single hemorrhoid at a time, and not to make more than one puncture. When examined next day, the mass will be found firm and hard, with an indurated area running above the pile tumor for an inch or more; this induration occasionally takes several weeks to disappear.

Alcohol is preferred by Boas,[17] the German gastroenterologist. The 96 per cent strength is used, and not more than from 10 to 20 drops injected. In some 130 injections done over a period of six years, there were only six recurrences; in two cases a second, and in one a third treatment was necessary. Bensaude[18] of Paris uses quinine and urea hydrochloride. He gives a treatment once a week, and for some six months preceding the time of report, injected about the base of the mass. On fifty-two occasions there were only six recurrences, though he admits that four instances of prolapsed hemorrhoids were improved either not at all or but slightly.

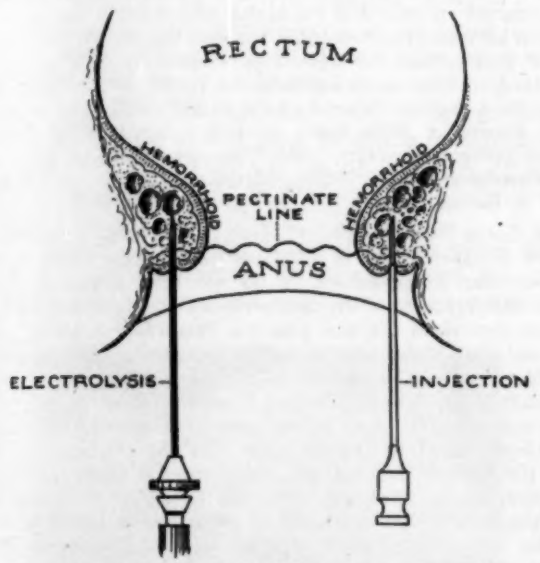


Fig. 8.—Method by injection (right) and electrolysis (left).

Dukes[19] studied the changes caused by phenol injections. In ten subjects, one pile tumor was injected as usual, and this injected mass, with a control not treated, was later excised, the interval between injection and excision ranging from one to twenty-one days. He decides that phenol, being a powerful irritant, initiates an aseptic inflammation, characterized by dilatation of vessels, emigration of leukocytes and transudation of lymph. By these means, the alien fluid is diluted and removed; thereafter the inflammation quickly subsides. All the changes observed microscopically represent the effort of the tissues to repair an injury. The inflammatory changes in the first three days do not play any important part in the cure of hemorrhoids; it is the secondary changes, in particular the intravascular clotting, and subsequent fibrosis, to which any beneficial effect must be ascribed.

For electrolysis, the lithotomy, the left lateral or the knee-chest position can be resorted to. As galvanization frequently sets up considerable pain, local anesthesia should be induced. For this I use 2 per cent procaine hydrochloride with epinephrine. As a rule, it is advisable to anesthetize the hemorrhoid also. A cambric needle about 3 inches long is prepared by sticking both ends into corks for about one-fourth inch, then dropping the whole into shellac. When dried, the body of the needle, but not the ends, is insulated. The needle fits into a needle holder and is attached to the positive pole for use. The negative pole is fastened to a large, moist pad which is then strapped to the body so as to keep good contact. This assures a steady current, thus preventing uncomfortable breaks. In from five to ten minutes, the anoscope is inserted and the hemorrhoids brought into view and swabbed with some antiseptic solution. The needle being introduced near the top of the mass, the insulated portion rests in the mucosa, leaving the noninsulated part in the pile tumor. The needle should not be passed into the base, as much pain may be caused. The current is then turned on carefully and slowly, using from 10 to 15 milliamperes until the mass is ashy or blanched. No particular change will be noticed until about the third day. A fresh needle should be used for each hemorrhoid. It seems to be immaterial whether all the masses are treated at the same time, or only one at each sitting. During the treatment, an assistant holds the anoscope so that the operator may guide the needle with one hand and control the current with the other.

31 North State Street.

17. Boas, I.: Med. Klin. **18**: 753 (June 11) 1922.
18. Bensaude, R.: Bull. et mém. Soc. méd. d. hôp. de Paris **47**: 686 (May 11) 1923.
19. Dukes, Cuthbert; and Anderson, H. G.: Brit. M. J. **2**: 100 (July 19) 1924.

ABSTRACT OF DISCUSSION

DR. CURTICE ROSSER, Dallas, Texas: I enjoyed particularly the aspect of Dr. Pennington's paper in which he demonstrated to us the methods by which infection becomes more or less fixed and chronic in connection with hemorrhoids, a factor to which, perhaps, we have not paid sufficient attention. Dr. Pennington demonstrated the sinuses and crypts in connection with which it becomes a chronic infection, and which make hemorrhoids as well as other anal and lower rectal disease a common source of infection elsewhere; in other words, which make them a possible focus of infection. The question of technic in operation is of some interest. While I agree with him that the cautery is not an ideal method for removing infected hemorrhoids, because of the fact that it must leave the base of the hemorrhoid where most of the infection would be present, I would not go so far as to believe that there would be only one proper type of operation, although I regard Dr. Pennington's as a fairly logical procedure in the removal of hemorrhoids. Hemorrhoidectomy is a surgical operation. Therefore, the same principle which applies to surgery elsewhere would apply. If we have, first, a proper exposure, secondly, a proper hemostasis, and, thirdly, a proper removal of pathologic tissue, the ideals of a surgical operation would be carried out. A proper exposure means a proper dilation of the sphincter. I do not believe, and I am sure that most proctologists would agree with me, that manual dilation is necessary or that manual dilation is not harmful. But exposure of the field can be obtained by a proper block anesthesia of the nerves supplying the anal, which may be done by infiltration of the inferior hemorrhoidal nerves laterally or, preferably, by caudal anesthesia. A ligature on the superior hemorrhoidal artery (branch) promixal to the hemorrhoid gives hemostasis, and an excision of the hemorrhoid, together with a fair portion of its covering, which is redundant, effects a surgical removal of the varicose tumor. I think that any excision and ligature operation which complies with those fundamentals would be effective. Dr. Pennington's contribution, calling to our attention the fact that hemorrhoids may contain chronically infected diverticula holding the infection, has been of substantial value.

DR. J. F. MONTAGUE, New York: It is apparent that Dr. Pennington leans heavily toward the theory that infection is the principal cause in the production of hemorrhoids. There is absolutely no supportive evidence for this assump-

tion or presumption. The demonstration of granular detritus and precipitated stain cannot be considered proof of infection. While not denying the occurrence of mucosal ulceration and bacterial invasion of the hemorrhoidal areolar tissue, I feel impelled to call attention to the difference that exists between such demonstrable secondary infection and the question of infection primarily producing hemorrhoids. There is a statement in a textbook to the effect that certain investigators found that on aspirating blood from a hemorrhoid they obtained a growth of various bacteria, and the assertion is made that this proves that infection is a primary cause in the production of hemorrhoids. Such a statement in this day makes one think that Harvey lived in vain. It must be evident, if we admit the circulation of blood as a fact, that the aspiration of blood from a hemorrhoidal vessel is equivalent to withdrawing it from the general circulation. If such a culture proves fertile there are two possible deductions to be made. First, that the patient has septicemia. I doubt whether anybody would be quite so absurd as to claim that septicemia is a cause of hemorrhoids. Second, the possibility and, indeed, the probability that, in obtaining the culture by aspiration of the hemorrhoid, the needle was contaminated by passing through the admittedly nonsterile mucosa. All in all, I think that the rôle of infection is purely secondary and very much exaggerated in this presentation. Those disturbances in portal circulation which often induce hemorrhoids may also be the cause of gastric disturbances; this explanation of stomach symptoms coincident with hemorrhoids seems less far fetched than the focal infection theory. The cautery operation has been used for many years in many lands and is considered one of the approved methods of hemorrhoidectomy. I have given the operation which Dr. Pennington proposes a fair trial and have not had the excellent success noticable in his hands. I cannot agree with him that it is the simplest, safest and most scientific because I regard it as a very messy affair, exceedingly bloody and far from being a complete operation. It is an "open" operation in more ways than one. The ligature with excision method is regarded by the majority of surgeons as the most scientific and has proved the most satisfactory. It implies an accurate dissection of the mass of hemorrhoidal venules and a safe ligation of these.

DR. JEROME M. LYNCH, New York: In my youth, I took a great liking to this plug of Dr. Pennington's, and took it on myself to modify it. Since that time I have regretted this ambition. I go into a hospital, find the plug in use, and they tell me, "This is your plug." "No," I hasten to say, "that is Dr. Pennington's plug. I don't use plugs now." I agree with Dr. Rosser that the same principles apply to rectal surgery as to surgery in any other part of the body. My experience has been that the less trauma we cause, the less trouble we have; the less the tissues are stretched and injured the less pain afterward. Incontinence may follow sphincteric dilatation, because of injury or hemorrhage; but if the muscle is cut and incontinence follows, repair is easily made. Where does Dr. Pennington get the idea that patients should remain in bed from ten days to three weeks following a hemorrhoidectomy? In my practice, patients, following this operation, are out of the hospital in a week.

DR. ANDRÉ L. STAPLER, Chicago: I have seen Dr. Pennington's rectal operation for hemorrhoids. Somebody said it was messy. There is less blood lost in the Pennington operation than any other operation. The convalescence period of his patients is shortened by the fact that most of the patients are out of bed in a few days. The technic of the operation is simple.

DR. ALTON OCHSNER, Madison, Wis.: I had the privilege of watching Dr. Pennington's work and can commend it. When I first saw his results, I was very favorably impressed. The fact that the patient could get out of bed the second day seemed almost unbelievable. At the University of Wisconsin we have run parallel cases, one patient being operated on by the Pennington method, another being operated on by one of the other methods. Those operated on by the Pennington method have practically no postoperative discomfort. They are out of bed on the second or third day. They are out of the hospital on the fifth day. We have come to consider the Pennington operation as the more rational operation for cases of hemorrhoids, especially the infected type. In regard to the sepsis or infection in cases of hemorrhoids, I feel that Dr. Pennington has proved conclusively that there is a perivascular infiltration. First, a clot forms. This clot becomes infected. An infected hemorrhoid does not necessarily mean that there is sepsis, but it is a focus of infection, and unless this focus of infection is removed, absorption of toxins occurs.

DR. JOSEPH E. ROWAN, Wichita, Kan.: I am very familiar with Dr. Pennington's method of operating, having taught it for ten years in a postgraduate school in Chicago. It works equally well in Kansas. The principal thing I noticed is the difference between the method described today and the one originally described several years ago, in the position of the triangular forceps, which I believe is a decided improvement in the technic. It is gratifying to have a patient ready to leave the hospital after three days without pain or discomfort. The slides shown prove the theory which has been in my mind for some time, that the focus of infection, so called, was not entirely removed. Whether the hemorrhoid is an infection or whether it is a tumor, is a question. Considering it as an infection, we know that the source of infection must be removed entirely and the slides shown prove it. I believe that in all hemorrhoidectomies the skin tag should be removed, as it is essential for future development. The principles involved in this operation as done by Dr. Pennington are: first, the complete removal of the tumor or the foci of infection, leaving a clean base; second, a longitudinal incision which prevents strictures; third, the avoidance of trauma to the remaining tissue; fourth, adequate drainage, and apposition of tissue.

DR. LOUIS BUIE, Rochester, Minn.: The method of removal of the diseased tissue is a matter that deserves less consideration than other things. I do not believe that it makes much difference how the hemorrhoids are removed as long as one gets them out and gets the hemorrhoids alone. I do not feel that the infection within the hemorrhoid or within the blood stream, or wherever it is, is the significant thing in healing after the operation is done. And the so-called open operation, it seems to me, does little more than to allow the blood vessel to remain open. In these cases, the fact that the field is infected and the wound is open causes the infection to be admitted after the operation is completed. Everybody who does any type of surgery does hemorrhoidectomies, but nobody takes care of hemorrhoidectomies after the operation has been done. The result is that a patient who has an operation is confined to his bed for a variable length of time. Dressings are not done, varying from three days to a week, and the result is that when the wound is seen again it does show a lot of infection and edema. In hemorrhoidal surgery we depart from the usual formulas of postoperative cleanliness and allow the wound to remain dirty. One particular fact which is interesting to men doing gastroenterology aside from the fact that is should be interesting from the standpoint of focal infection is the matter of diagnosis; and in this instance there is rarely any discussion. What I want to impress on men doing general work is that when a patient comes in and says, "I have piles," he may think that he has hemorrhoids, but it should not mean that until it is proved. I do not maintain that hemorrhoids are hard to diagnose, but there is a notable nondependability of history in connection with all bowel conditions. A man may have diarrhea. He may have constipation, and he may in either instance have a cancer or ulceration of the bowel. One out of every five patients who came to the Mayo Clinic during a period of ten years, totaling 1,937 patients, who had a cancer of the rectum had been treated or operated on for hemorrhoids during the period of symptoms. When a patient says that he has hemorrhoids, one should bear in mind that there are many other conditions which can give the same symptoms and should try to find out the real condition that causes the trouble.

DR. J. RAWSON PENNINGTON, Chicago: I am glad to know that the principles embodied in my hemorrhoidectomy—leaving the wound open and providing for free drainage—which I have contended for for twenty-six years are now bearing

fruit. Dr. Lynch wanted to know where I got the information that patients stay in bed from ten days to three weeks after the usual hemorrhoidectomy. I got it from the Mayo Clinic in this country, from Mummery and Miles of London, and from others. The illustrations speak for themselves. To say that the infection gets into the hemorrhoidal tissues after the operation rather surprises me. I did not say that all hemorrhoids are infective, but I did say that they are all potentially so. The discussion shows that those who are familiar with, or have seen, the work approve and practice the technic.

TOLERANCE TO FOREIGN BODIES WITHIN THE POSTERIOR SEGMENT OF THE EYE*

ALBERT E. BULSON, JR., M.D.
FORT WAYNE, IND.

In 1882, Hermann Knapp [1] made the statement that, though in the great majority of instances foreign bodies which penetrate into the interior of an eye entail its ruin and too frequently even that of its fellow, they occasionally are encountered situated harmlessly in every part of the globe. He gives a short history of twelve cases on record up to that time, in which foreign bodies have lain innocently in the retina without great or even any impairment of central vision. These are as follows:

Von Graefe [2] reported three cases in which small pieces of metal penetrated the eye, reached the inner membranes, and remained on them, not encapsulated

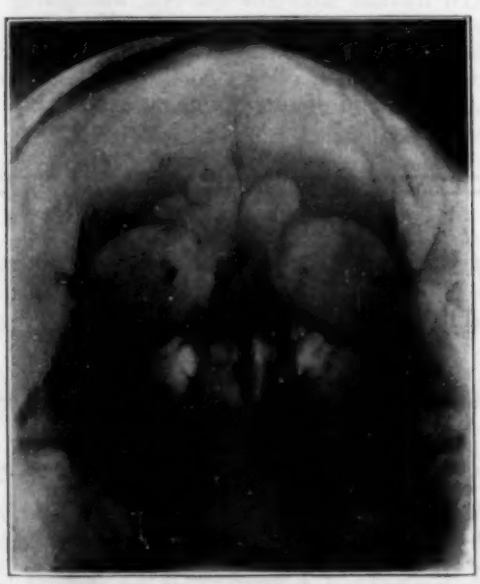


Fig. 1 (case 2).—Foreign body in right eye, front view.

but free, causing hemorrhages and transient opacities of the vitreous. They left local destruction of the retina, and irregular choroidal pigmentation and a corresponding scotoma, but otherwise there were useful sight and no protracted irritation.

In the fourth case, described by Jacobson,[3] a chip of iron was encapsulated in the retina, where it produced no irritation and but little effect on the vision except for a defect in the field.

In the fifth case, Hirschberg [4] told of a fragment of metal passing through the cornea, iris, lens and vitreous and lodging in the retina, where it became encapsulated. Useful vision continued for a year until the lens became opaque.

Hirschberg [5] described a sixth case in which a chip of iron was embedded in the retina, with one end free

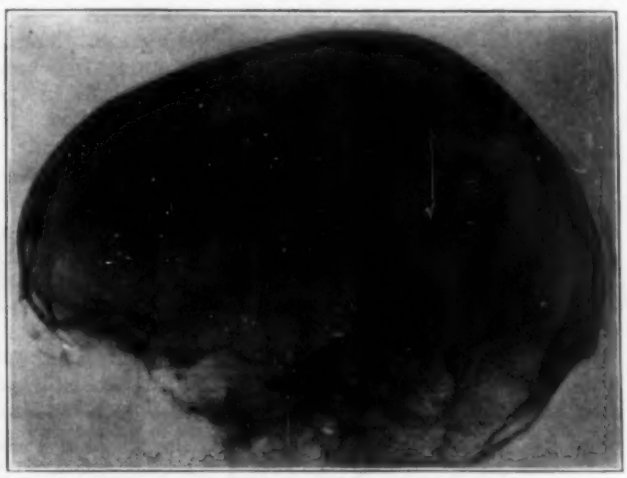


Fig. 2 (case 2).—Foreign body in right eye, side view.

in the vitreous; there were useful vision and no irritation eight months later.

In the seventh case, reported by Strawbridge,[6] an iron splinter was lodged in the fundus, and though there were floating opacities in the vitreous there was useful vision, and no irritation of either eye occurred during the two years that the patient was under observation.

In Siegel's [7] case, the eighth, a fragment of a gun cap was located in the region of the macula. There was retention of useful vision, and no irritation occurred for the several months that the patient was under observation.

Briere's [8] patient, the ninth, had a small splinter of steel encapsulated in the retina. Useful vision was retained for more than the year that the patient was under observation.

In the tenth case, described by Snell [9] of Birmingham, a small piece of steel was embedded in the retina near the optic disk, with practically no disturbance in the vision, as the patient could see as well with this eye as with the other.

Hirschberg [10] reported an eleventh case, in which a splinter of iron was fastened to the retina and projected into the vitreous. Useful vision was preserved for the several months that the patient was under observation.

To this number of cases Knapp added the twelfth, in which a chip of iron passed through the cornea, iris, lens and vitreous and lodged in the retina, with one free end projecting into the vitreous, where it produced a circumscribed scotoma but did not have any effect

* Read before the Section on Ophthalmology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Knapp, Hermann: Arch. f. Ophth. **11**: 222, 1882.
2. Von Graefe, A.: Arch. f. Ophth. (von Graefe's) **3**: 347, 1857.
3. Jacobson: Arch. f. Ophth. **9**: 129, 1865.
4. Hirschberg: Klin. Beobachtungen, 1874, p. 103.
5. Hirschberg: Berl. Klin. Wchnschr., 1875, p. 300.
6. Strawbridge, T.: Tr. Am. Ophth. Soc. **2**: 305, 1878.
7. Siegel, O.: Inaug. Diss., Tübingen, and (Naegel's) Jahresb., 1876. p. 544.
8. Briere: Ann. d'ocul. **78**: 42, 1877.
9. Snell: London Ophth. Hosp. Rep. **9**: 370, 1878.
10. Hirschberg: Arch. Ophth., German ed. **9**: 309; English ed., 1880, p. 386.

on the central vision, which was 20/20. The patient was observed for ten years, during which time there was no irritation.

A thirteenth case occurred in Knapp's hospital during his absence in 1877, in which a foreign body lodged in the retina, and was discovered after the removal of a traumatic cataract. The aphacic eye gave 20/20 vision with proper glasses, and there were no symptoms of irritation during the time that the patient was under observation.

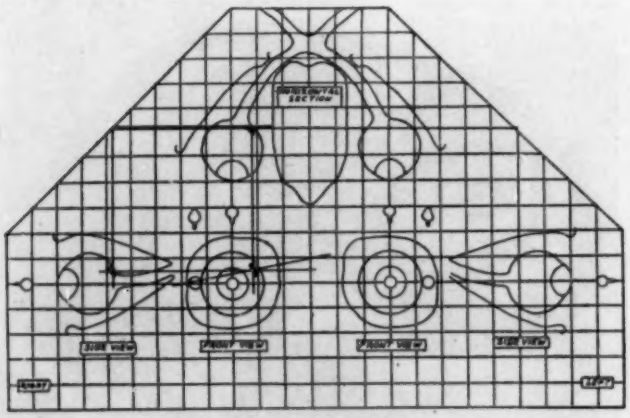


Fig. 3 (case 2).—Localization of foreign body. Size, 5 by 3 by 1 mm. First exposure, side view, 5 mm. above horizontal plane of cornea; second exposure, horizontal section, 8 mm. to nasal side of vertical plane of cornea and 23 mm. back of center of cornea.

In commenting on these cases, Knapp said that we should not forget that the toleration, even if once established, is not illimited, as the foreign body after any number of years may become loose and produce irritation, or without coming loose may produce repeated attacks of internal inflammation. A number of examples of the former condition are known, and the latter he illustrated in a case reported by Strawbridge,[11] in which an iron splinter had passed through the cornea, iris and lens and lodged in the sclerotic near the optic disk. After a severe iridochoroiditis, the eyeball remained quiet for three years. Then a second attack occurred, lasting a short time, which was followed by a four year interval of rest. A third attack of similar character, and a three year interval of rest, were succeeded by a chronic iridochoroiditis, which on account of the sympathetic irritation in the fellow eye rendered the removal of the injured eye necessary. The splinter was embedded firmly in the sclerotic, and the interior of the eyeball filled with the products of previous inflammatory attacks.

To these cases may be added the one by Rider[12] in which a piece of steel, six weeks after the injury, was discovered, with the ophthalmoscope, embedded in the retina, with one end projecting into the vitreous. There was no irritation during the ten weeks that the patient was under observation.

Snell[13] reported three cases of steel embedded in the retina, one of which was included in Knapp's report, in which useful vision was retained and no irritation occurred during several months that the patients were under observation. Two were observed for more than two years after the injury, and in one a foreign body was removed by the magnet several months after the injury.

11. Strawbridge, G.: Tr. Am. Ophth. Soc. **2**: 103, 1878.
12. Rider: Arch. Ophth. **13**: 264, 1884.
13. Snell: Tr. Ophth. Soc. U. K.: **6**: 407, 1886.

Rava[14] describes a shot encysted in the retina and choroid, visible with the ophthalmoscope, with useful vision and no irritation for the one and a half years the patient was under observation. The same author reports two other cases of steel lying or embedded in the retina; in one the electromagnet failed to extract the steel and the eye quieted down with finger-counting vision.

Adams[15] reports a case in which a piece of steel was embedded in the retina near the macula, with preservation of almost perfect central vision two years after the injury. No attempt at extraction of the foreign body beyond holding the large electromagnet near the wound was made. The author regards this case as interesting in connection with those reported by Knapp, and believes that all these reports cannot fail to compel us to reflect whether we have not, in times past, been somewhat hasty in advising enucleation, and possibly too energetic in endeavoring to extract foreign bodies. He concludes by saying that he intends to take more time and care in treating these cases hereafter. He advocates Knapp's method of complete rest in bed.

Armaignac[16] reported a case in which a small black pin remained embedded in the depths of the sclera for thirty-three years, when it produced a red, painful and watery condition that existed for three months, or until the foreign body was removed, after which the eye was perfectly quiet.

Buller[17] reported a case in which a piece of metal was found lying within the retina a short distance below the disk. Twenty-six days after the injury the patient said the eye felt well. The vision was 6/12, though there were pronounced evidences of neuroretinitis. Fourteen months later the eye still was giving trouble and the vision was reduced to 6/27. There was diffuse hyalitis, with fine opacities in the vitreous. The optic nerve was red and swollen. At the time the report was made the question of attempting to extract the foreign body with the magnet was under consideration.

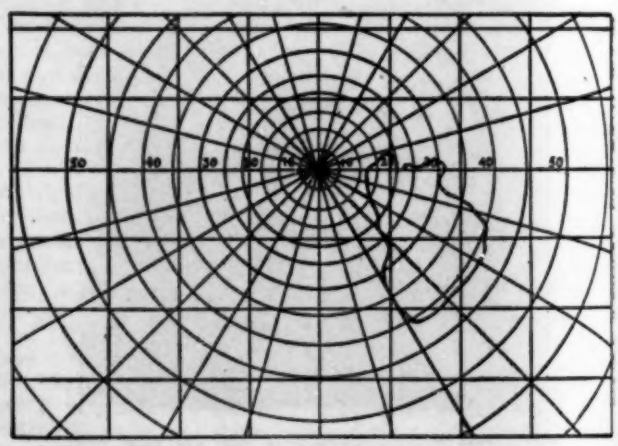


Fig. 4 (case 2).—Scotoma caused by foreign body; remainder of field normal for form and color.

Roy[18] reports a case seen in Sattler's clinic in Leipzig, in which a piece of steel was lodged in the retina. Three months later vision was 6/6, and the only sign of injury was a small scotoma in the lower field of vision.

In Hisch's[19] case, a small piece of steel in the retina was discovered with the ophthalmoscope several months

14. Rava: Ann. d'ocul. **10**, nos. 4 and 5.
15. Adams: Tr. Ophth. Soc. U. K. **3**: 115, 1883.
16. Armaignac: Rev. clin. d'ocul. **7**: 53, 1887.
17. Buller: Proc. Am. Ophth. Soc., 1892.
18. Roy: Ophth. Rec. **2**: 228, 1892-1893.
19. Hisch: Arch. f. Augenh. (Knapp's), 1899.

after the injury. There was no irritation, and the vision at the time of examination was 12/200.

Elching [20] reports a case in which a small piece of iron scale was discovered in the neighborhood of the macula. There was no irritation, and the vision was 6/12.

Priestly Smith [21] described a case in which one month after the accident a fragment of bell-metal was dis-

Fig. 5 (case 3).—Foreign body in right eye, front view.

covered lying on the retina at some distance from the inner side of the optic disk, with no other morbid appearance in the fundus. The metal was shown by quantitative analysis to be a mixture of copper, tin and zinc, with doubtful traces of lead and mercury. As the nature of the foreign body precluded the use of a magnet, and as the vision was very good and the eye remained free from pain and injection, no treatment seemed necessary. Five months later the patient avowed, and it was confirmed by inspection, that the foreign body had moved downward. Fifteen months after the accident the foreign body still was lying in its new position and an evenly diffused metallic deposit could be seen on the surface of the retina and around the arteries and veins, which looked like specks of gold leaf arranged in a more or less broken line along the center of the vessels. The patient had experienced no inconvenience. In commenting on this case, the author says that he has in his possession specimens of eyes in which a particle of steel or iron had remained long embedded during life, in which he has observed a well marked rust covered deposit over the entire retina, which appears to be evenly diffused without regard to the retinal vessels. Though he does not believe it possible that the patient permanently can retain a useful eye, at the time of making the report he did not deem it wise to interfere, as the chemical irritation, though undoubtedly present, seems to be acting very slowly.

Hermann Knapp [22] offers another contribution to the subject by reporting three cases of foreign body retained in the eye. In the first case, 20/30 vision and a quiet eye were retained for five months, then detachment of the retina set in and the eye was enucleated. In the second case a small chip of iron was discovered accidentally with the ophthalmoscope, lying just below the optic disk, and measuring half the size of the optic disk. The sight was perfect and the patient knew nothing of the existence of the foreign body. In the third case, a piece of metal was tolerated in the background of the eye for an unknown period, was under observation for a year, then worked loose, produced iridochoroiditis and required enucleation. Knapp then remarked that these cases of foreign bodies in the background of the eye show that, though apparently tolerated, they never can be trusted. If the foreign bodies are small and the accompanying changes trifling or absent, as in some of the cases cited, the tolerance may be absolute and permanent. Under other circumstances, the foreign bodies are likely to cause irritation and degenerative inflammation necessitating the removal of the eye.

Colburn [23] reports a case of glass in the vitreous remaining eight years without irritation, and another case in which a piece of brass, lodged in the retina between the macula and the disk, remained four years and finally became encysted. In commenting on these cases he made the statement that aseptic bodies frequently become encysted and remain in the eye during the lifetime of the patient.

Ranlin [24] tells of a man whose eye had retained a chip of copper for twenty years without inconvenience.

Ramsay [25] reports a case in which a small fragment of steel was embedded in the ciliary region for more than twenty years without a moment's discomfort and with no impairment of sight.

Fox [26] states that he has observed a number of cases in which the foreign body, after entering the viterous, produced very little reaction, and even in the case of

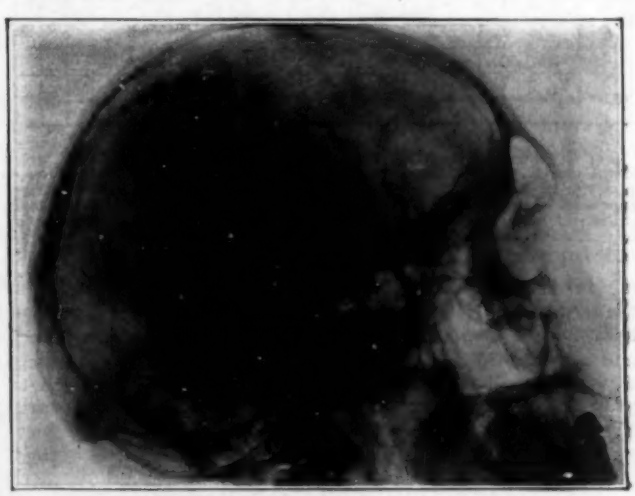


Fig. 6 (case 3).—Foreign body in right eye, side view.

large bodies the result predicted have not always taken place.

Morrison,[27] despite the tendency of copper to produce suppuration, reports an unusual case in which the eye harbored a piece of copper for a whole year.

Cunningham [28] reports a case in which a private in the late war was injured with a splinter from a machine

20. Elching, A.: Arch. f. Augenh., 1890.
21. Smith, Priestly: Tr. Ophth. Soc. U. K. **12**: 191, 1892.
22. Knapp, Hermann: Arch. f. Ophth. **23**: 172, 1894.
23. Colburn, in Diseases of the Eye, 1902.
24. Ranlin: Ann. d'ocul. **118**: 287.
25. Ramsay: Eye Injuries and Their Treatment, 1907, p. 78.
26. Fox, in Diseases of the Eye, 1904, p. 341.
27. Morrison: Indianapolis M. J. **26**, no. 3.
28. Cunningham: Tr. Ophth. Soc. U. K. **42**: 171, 1922.

gun in 1916, and soon after, ophthalmoscopic examination disclosed a foreign body in the retina and projecting into the vitreous. It evidently was not magnetizable, as it was not moved by the giant magnet. Five and one-half years after the accident, the vision was reduced to finger counting, the foreign body occupied the same position that it did in the beginning, and the eye was quiet.

After the roentgen ray came into use, it became practically universal to locate foreign bodies within the eye by its aid, and if the foreign bodies could not be withdrawn by a magnet the eye was enucleated. In consequence, very few cases have been reported during the last few years in which foreign bodies have been retained within the eye.

It is for the purpose of adding to the number of cases on record that I report the following:

REPORT OF CASES

CASE 1.—About twenty years ago, a young man, referred to me from Van Wert, Ohio, had been injured a day or so previously by something that flew into his eye while he was hammering a piece of iron on an anvil. Examination disclosed a congested eyeball in the temporal half, but no definite evidence of perforation was discovered. Ophthalmoscopic examination disclosed a small spot of hemorrhage in the fundus to the nasal side of the disk, and it was assumed that a foreign body had penetrated the eyeball, passed through the vitreous, and on out through the sclera on the opposite side. As there was only slight disturbance of the vision, it was decided to pursue a waiting policy. At the end of several weeks a dark, irregular object was seen in the retina at the site of the injury, surrounded by a considerable area of degenerative change, including pigmentation and white lines. Two years later there were numerous floating opacities in the vitreous and a considerable reduction in the vision. Approximately ten years later, when the patient passed from observation, there was a cataractous lens, but the eye was perfectly quiet and there was no evidence of sympathetic involvement of the other eye.

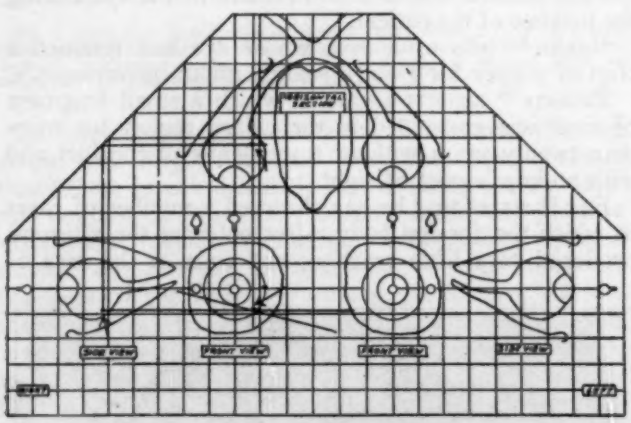


Fig. 7 (case 3).—Localization of foreign body; small particle of metal about size indicated lying either on or within coats of eyeball in lower posterior portion of right eye on nasal side at points indicated. First exposure, side view, 9 mm. above horizontal plane of cornea; second exposure, horizontal section, 7.5 mm. to nasal side of vertical plane of cornea, and 18+ mm. back of center of cornea.

CASE 2.—A man, aged 43, a mechanic, late in the fall of 1924 was pounding a steel automobile gear with a hammer, when he felt a stinging sensation on the temporal side of the right eye, and immediately thereafter noticed a minute red spot on the temporal side of the eyeball. As it gave him only temporary discomfort and did not disturb his vision, he paid no further attention to the injury. In November, 1925, the patient had a bad fall, resulting in a fracture of the right arm, a fracture of the jaw and some contusion about the left eye. He was referred to me, December 10, for an examination of the left eye, to determine any injury that might have occurred as the result of the fall. In the course of a routine examination the ophthalmoscope disclosed a foreign body just to the nasal side of the disk of the right eye. On mentioning the discovery to the patient the history was obtained, and he volunteered the information that Dr. Robert Sattler of Cincinnati had made a similar discovery a few months previously, and advised that nothing be done in view of the fact that the eye was perfectly quiet and possessed normal central vision. The foreign body appeared to be about 5 mm. long, 3 mm. wide and 1 mm. thick, and was embedded in the retinal tissue but projected into the vitreous. Except for a small area seemingly surrounding the foreign body in which degenerative changes could be seen, the retina appeared to be normal. The vitreous presented one or two small translucent bodies. Central vision was 15/15 —2 with correcting lenses, and the field of vision was normal except for a small scotoma marking the site of the foreign body. The roentgenograms showed that the foreign body had not penetrated through the sclera at the point of attachment. The eye has never given the patient a particle of disturbance since the date of the injury, and being perfectly quiet and possessing nearly normal vision, he was advised to let the eye alone but to watch it carefully and with the development of any untoward symptoms to consult an ophthalmologist at once. Careful examination failed to disclose any scar or other evidence to indicate the point of entry of the foreign body.

CASE 3.—A man, aged 40, a boilermaker, was struck in the right eye, May 2, 1924, presumably by a piece of steel that flew from a hammer. Two days later an ophthalmologist gave the opinion that a foreign body had penetrated the cornea, gone on through the iris, vitreous and sclera, and was lodged in the orbit outside the eyeball. The opinion evidently was based on an erroneous report from a roentgenologist. Under palliative treatment the eye soon quieted down and the patient returned to his usual vocation, though there was a progressive loss of vision occasioned by the slow development of a traumatic cataract. About one year later he developed an acute iridocyclitis, which did not yield to the usual treatment, and he was referred to me in consultation. The patient exhibited, aside from the usual manifestations of iridocyclitis, a scar in the cornea, with a hole in the iris immediately opposite, and an opacity in the lens which precluded the possibility of an ophthalmoscopic examination being made. The eyeball was tender to touch and tension was subnormal. The patient was referred to a competent roentgenologist, who reported the presence of a foreign body in the retina. Enucleation was advised and the referring oculist performed it, with a later report to the effect that the piece of steel was found within the eyeball in the exact location designated by the roentgenologist.

Notwithstanding the fact that these cases and probably many more known to ophthalmologists of experience seem to prove that long continued tolerance of foreign bodies within the posterior segment of the eyeball is possible and should be considered when electing the form of treatment to be adopted, yet the prognosis in these cases is considered by nearly all authors of note as unfavorable. In discussing the subject, Wurdemann [29] says that permanent toleration of foreign bodies in the posterior segment of the eye is so exceptional that it should not be considered.

Theobald [30] says that the sooner a foreign body is discovered and removed, the greater, other things being equal, is the likelihood of saving the eye.

Fick [31] says that a foreign body within the eye offers an extremely unfavorable prognosis, and that the prognosis is bad even with proper treatment. However, he qualifies this statement by saying that if the foreign body in the vitreous is a splinter of copper, wood, stone, glass or china, an inactive treatment may be followed.

29. Wurdemann: Injuries of the Eye, 1912, p. 365.
30. Theobald: Prevalent Diseases of the Eye, 1906, p. 497.
31. Fick: Diseases of the Eye and Ophthalmoscopy, 1896, p. 417.

and if the eye does not calm down the sclera should be incised and through it an attempt made to seize and draw out the foreign body with forceps. If this is unsuccessful, the eye must be removed to avoid injury to its fellow.

Parsons [32] says that foreign bodies in the vitreous offer a particularly bad prognosis. He gives as a rule that foreign bodies should be removed, but he qualifies the statement with three exceptions: first, that the foreign body is sterile; second, that the foreign body has produced little damage to vision, and third, that the process of removal almost invariably will destroy sight.

Jackson [33] says that the earliest possible removal of the foreign body is the first thing to be considered in nearly all of the cases, and it usually should be done at any cost, even to the removal of the eye. Even after the successful extraction of a foreign body the safety of an eye is not assured, for in the majority of cases useful vision will be lost and the injured eye will have to be sacrificed for the safety of the other. Though the eye seems to do well for a time, it may become the seat of a slow uveitis which, after weeks or months, will destroy it.

Norris and Oliver [34] say that chemically indifferent and smooth objects, such as a piece of glass, a lead pellet, or a portion of highly polished wire, may remain a long time in the vitreous without causing any inflammation, but a fragment of iron with a roughened surface soon gives rise to inflammation and becomes completely encapsulated, after which the inflammation subsides but is very apt to recur.

Fox [26] says that the resistance of an eye containing a foreign body or through which one has passed is always lessened and requires surveillance, as it is likely to become seriously inflamed at some remote period from the most trivial cause.

Parsons,[35] after referring to the fact that in rare cases foreign bodies within the vitreous may become encapsulated and remain indefinitely without setting up any serious changes, and to the cases of remarkable cures brought about by the use of magnets in the extraction of iron particles, concludes with the significant statement: "Unfortunately, there are very few records of the late history of these cases. Certainly in a large number, deterioration of vision occurs and even loss of sight, and it is probable that this must be regarded as the usual sequel." He thinks that if chemical action is absent, the retention of a foreign body may lead to disorganization of the vitreous and retina, and though there may be little irritation for a considerable period, iridocyclitis and loss of the eye must, however, be regarded as the final results.

Haab [36] says that it is often more advisable to leave nonmagnetizable foreign bodies in the eye than to open up the vitreous and attempt their removal, as the endeavor to remove such bodies often damages the eye more than to leave them undisturbed.

Wood,[37] while generally condemning the effort to remove nonmagnetizable foreign bodies that have been in the eye for some days or weeks, says that even if they are left within the eye, enucleation subsequently becomes necessary through the development of an iridocyclitis.

De Schweinitz [38] says that while foreign bodies in the background of the eye may be tolerated for long periods of time with retention of good vision, they never can be trusted, as they are liable to cause degenerative changes.

Hansell and Sweet [39] say that "an eyeball containing a foreign substance is always a source of danger, both to itself and to its fellow. The instances in which pieces of metal have remained quiescent in the vitreous chamber for many years are exceptions, and in some of these cases extraction eventually has been required by reason of an inflammation that menaced the safety of both eyes. In three cases of retained foreign body studied by the authors, sympathetic irritation developed in one case in thirty years, another in eighteen years, and a third in ten years after the original injury. Early removal of foreign bodies gives the best chance of saving sight, or at least of preserving the ball. Late attempts at extraction usually are unsuccessful and both sight and eye are lost."

A similar statement is made by Wurdemann [29] when he says: "Foreign bodies in the posterior segment of the eye, if allowed to remain in the eye, as a rule not only destroy the sight, and cause atrophy of the globe, but may result in sympathetic ophthalmitis." The results of removal certainly are not as good, for it may be safely said that if the ultimate statistics of cases in which foreign bodies have been removed from the posterior segment by magnet or otherwise could be obtained, far more than one half would show blindness from iridocyclitis, atrophy, detached retina, and in a large proportion enucleation ultimately had to be done. Every effort must be made promptly to free an eye from a foreign body because at some time or other retinal detachment or destructive inflammation probably will call for enucleation. "Permanent toleration is so exceptional that it should not be considered."

Weeks [40] says that toleration of a foreign body within the eyeball depends on a number of things: first, the nature of the foreign body; second, size; third, position; fourth, whether it is aseptic or not; fifth, its chemical composition, and sixth, whether it becomes encapsulated or remains free. He then goes on to say that lead and glass are tolerated best; copper is most dangerous, as it may produce suppuration by irritation of the tissues alone without the presence of micro-organisms. His final conclusion is that it is best to remove foreign bodies from the eye in all recent cases unless the body is small, aseptic and nonmetallic, and in all cases in which there is the least evidence of inflammatory or degenerative reaction.

Beard [41] says that a foreign body in the vitreous is a very grave affair, whatever its nature. Sooner or later, with but few exceptions, the sight is lost, and in the vast majority of cases the eye itself is destroyed. Worse still, a large percentage of the instances in which sympathetic ophthalmia have occurred is in consequence of a foreign body in the vitreous of the fellow eye. He then offers some rules of guidance for intervention and abstention:

> If an eye with a foreign body in the vitreous is perfectly quiet, particularly if some time has elapsed since it entered, it is probably well encysted. Here, whether the eye is hopelessly blind or not, intervention is not indicated. Instead, the patient is instructed to watch closely and to report any signs of disturbance in the eye to a competent oculist. This is

32. Parsons, in Diseases of the Eye, 1907, p. 442.
33. Jackson: Manual of Diagnosis and Treatment of Diseases of the Eye, 1900, p. 498.
34. Norris and Oliver: System of Diseases of the Eye, 1898, p. 389.
35. Parsons: Pathology of the Eye 4: 1172, 1908
36. Haab, O.: The Removal of Foreign Bodies from the Eye, J. A. M. A. 39: 463 (Aug. 30) 1902.
37. Wood: System of Ophthalmic Operations 1: 800, 1911.
38. De Schweinitz, G. E., in Diseases of the Eye, 1924, ed. 10.
39. Hansell and Sweet, in Diseases of the Eye, 1903, p. 369.
40. Weeks, in Diseases of the Eye, 1910, p. 1615.
41. Beard: Ophthalmic Surgery, 1910, p. 622.

particularly true of certain small particles that can be seen with the ophthalmoscope.

After saying that in all recent cases it is most imperative that steps looking to the riddance of the foreign body from the eye should be taken at the earliest possible moment, he concludes with the following significant statement:

> The mere fact that foreign bodies have been known to lie in the vitreous from twenty to forty years without inciting mischief is no sign that this will happen in any given case, nor is great length of abode within the eye of necessity a bar to intervention.

From a study of the available history of cases, and the literature on the subject, a considerable portion of which has been quoted, it would seem that, despite the fact that some brilliant results apparently have followed the early removal of magnetizable foreign bodies from the posterior segment of the eye, it is questionable whether the results in any considerable number of such cases continued indefinitely, for there are reports indicating that some of such cases eventually have come to destruction of sight and even loss of the eyeball, and not a few of them have required removal of the eyeball early after the intervention.

The question then arises as to whether the end-results would not have been equally good if a policy of nonintervention had been followed, for it is quite possible that conservative treatment in some of these cases would have resulted in the saving of good sight, or the eyeball, or both, for a considerable length of time. Even if these eyes do come to enucleation later on they are no worse off and in not a few cases would be better off. Furthermore, is it not possible that in some of the numerous cases in which a foreign body has lain in the posterior segment of the eyeball for many years without loss of useful vision or eyeball the eye would have been lost promptly after early attempts had been made to extract the foreign body, and if such cases are under surveillance is the conservative treatment not justified, and emergency surgery as effective and as safe years after the accident as it is early after the injury?

It will be admitted, as pointed out by Weeks, that toleration of a foreign body within the eyeball depends on a number of things which he has enumerated, all of which should be taken into consideration in deciding the management of the individual case. As a general proposition, serious consideration should be given to the question of attempting to remove foreign bodies from the eye in all recent cases, but the attending ophthalmologist should have in mind, as pointed out by Beard, that there are rules of guidance for abstention or nonoperative treatment. Whether the surgeon elects to remove the foreign body by means of a magnet or otherwise, and whether results of the effort are successful or unsuccessful, or whether he elects to pursue a conservative or waiting policy, does not alter the fact that the patient must be under the observation and care of a competent ophthalmologist. If the patient is solicitous of his own welfare and will continue under such observation, I believe that the knowledge that foreign bodies within the eye are tolerated for prolonged periods of time, and often during the life of the patient, is worthy of consideration when we are deciding the management of such cases and that conservatism is more often indicated than recommended by the majority of writers on the subject.

CONCLUSIONS

1. It is assumed that in the majority of cases, loss of vision as well as loss of the eyeball is due to inflammatory, degenerative and structural changes brought about directly or indirectly by the trauma and infection, and not to the mere presence of a foreign body in the posterior segment of the eye, and that the removal of the foreign body does not in itself improve the prognosis, as it is very probable that ultimate loss of vision, eyeball, or both, in a series of comparative cases, would be as conspicuous in cases in which extraction had been performed as it would be in those in which extraction had not been performed.

2. In a large percentage of cases the patient is as well off if the foreign body is left in the posterior segment of the eye as he would be if it is extracted, particularly if the eye traumatism would be increased by the extraction, and for the following reasons:

(*a*) Even if the foreign body is removed successfully there is no assurance that the eye, sooner or later, may not become the seat of inflammatory and degenerative changes that may destroy sight and perhaps require enucleation. Furthermore, the effort at removal may do more damage to sight and the integrity of the eye than would be the case if there had been no intervention.

(*b*) If sepsis has been introduced, or iridocyclitis has set in, the prognosis is as good with the foreign body in the eye as with it out, for in either case enucleation would be adopted if the process did not yield with reasonable promptness to appropriate treatment. It is entirely problematic whether or not the foreign body in the posterior segment of the eye in itself would in any way alter the course of the inflammation. Perhaps copper may be taken as an exception.

3. The cases herein reported, and many more of a similar nature that probably could be obtained, indicate that preservation of useful and even fairly normal vision, or eyeball, or both, is possible for prolonged periods of time, perhaps during the lifetime of the patient, with retention of a foreign body in the posterior segment of the eye; it is justifiable to assume that these patients would not have fared any better nor would it have been any safer had intervention been adopted at any time in the course of any of the cases.

4. Every case is a law unto itself, but most of our teaching concerning the subject under discussion has been toward too much radicalism in electing intervention in foreign body cases. The plea, therefore, is made that there should be less haste in advising enucleation, and less general inclination to be energetic in endeavors to extract foreign bodies from the posterior segment of the eye. More time and thought should be given to an analysis of the conditions presented in each individual case, and the possibilities that may follow intervention and nonintervention. Furthermore, more time and care should be given treatment. The danger of sympathetic inflammation in the average perforating injury with retention of a foreign body in the eye is as great after the foreign body has been removed as it was before, and in either case the well trained ophthalmologist will recognize the time for the cessation of conservatism.

5. Cases of the type under discussion, whether the foreign body is removed or not, potentially are dangerous throughout the life of the patient, who should be so advised in order to be on his guard and ready to consult a competent ophthalmologist at the first indica-

tion of trouble. His best interests are not conserved by the ultraradicalism advocated by some of our ophthalmologic writers.

406 West Berry Street.

ABSTRACT OF DISCUSSION

DR. ANCIL MARTIN, Phoenix, Ariz.: In the mining industry of Arizona and northern Mexico, large quantities of dynamite and fulminating caps are used as explosives, and numerous eye accidents result. In my work for many large mining companies during the last twenty-five years, my records show 282 cases of intra-ocular foreign bodies. When foreign bodies are buried in the cornea sufficiently deep to escape friction from palpebral action, little or no irritation results. A satisfactory method of extracting foreign bodies from the cornea when they are numerous, as occurs from explosions, is to remove immediately the very superficial ones, allowing those more deeply buried to remain for several days before further attempt is made to extract them, while those still deeper, which by their removal would result in the formation of much scar tissue, are left untouched. One of my patients, on discharge, carried fifty particles of rock in the cornea, with a vision of 20/70, and another had approximately 175 masses in the right eye with vision 20/50, and 375 in the left eye with vision 8/200. All were free from ciliary congestion and photophobia. When foreign bodies are located in or on the iris, one would naturally conclude that their presence would be resented. However this is not always true. The lens, being avascular, is quite tolerant of foreign bodies. They may be removed, if it is thought advisable, by extraction of the lens. It may carry small foreign bodies for a long period of time, in some instances indefinitely, without other disturbances than a slight opacity. Injuries to the ciliary body are dangerous, because of their tendency to provoke sympathetic ophthalmia; however, this disorder is not as frequently seen as it is dreaded. The ciliary body is less tolerant of foreign bodies than any other structure of the eye, although it may carry a noninfectious substance for an indefinite period. A foreign body may pass through the globe, and useful vision be retained. A foreign body in the vitreous is a critical injury. If magnetic, it can usually be extracted. If nonmagnetic, extraction is always difficult, and frequently impossible. It may result in vitreous abscess, plastic inflammation, degenerative iridocyclitis, detached retina or phthisis bulbi, causing destruction of the eye. In the mining sections many persons, including children, are injured by exploding caps. The thin copper sheets of which the caps are constructed are torn and rolled into scroll-like fragments. These, though small, produce a relatively large and ragged wound. Pus foci readily develop. However, the presence of copper in the globe is not always destructive of vision. In every attempt to save vision, especially in explosive injuries, it is advisable to make haste slowly. After each operation, time must be allowed for the eye to become quiet. When foreign bodies are contained in both eyes, neither eye should be enucleated until it has been demonstrated which one presents the better prospect of vision. It is truly remarkable how often an eye, apparently destroyed, can be salvaged by painstaking effort. Of my cases of intra-ocular foreign bodies, 128 were the result of explosions, ninety-one of which produced injury to both eyes. In 146 cases, the foreign bodies were of steel; in eighty-five of rock; in fifty of copper; in eleven of lead, glass and other substances. One hundred and forty-six patients were discharged with a foreign body in the globe; of these twenty were steel, forty-one copper and eighty-five rock. Thirty-two had rock in the cornea. Five had foreign bodies in, or on, the iris; six were in the lens; two in the ciliary body, and 101 in the vitreous. Many of these eyes were retained, carrying foreign bodies because their fellow had been previously enucleated. Eighty-three, or 56 per cent, retained useful vision on discharge. Foreign bodies carrying infectious material are naturally not well tolerated. The conjunctiva, cornea, sclera and lens are most tolerant of foreign bodies, and the other structures of the eye less tolerant in the order named: iris, aqueous, vitreous and ciliary body. Inert substances, such as rock and glass, are more readily tolerated than metals. Iron and copper undergo chemical changes in the fluids of the eye, and produce more or less irritation. When the iron is magnetic it is usually extracted and the opportunity for undergoing chemical change obviated. Copper, being nonmagnetic and more corrosive than other materials, is the most serious form of intra-ocular foreign body. One third of my cases in which there was copper in the globe had to be enucleated. In my experience when copper enters the eye, if a vitreous abscess does not develop within three weeks, then it is as well tolerated as other metals—in other words, I find no late corrosive effects from copper. This may be because of encapsulation. So we conclude that the tolerance of the eye to intra-ocular foreign bodies is dependent on three factors: (1) their sterility; (2) their location, and (3) their character.

DR. JOHN GREEN, St. Louis: My remarks concern a single case of retained copper fragment in the vitreous. A young man received a small copper fragment in his left eye from the explosion of a dynamite cap. The point of entrance was in the sclera 5 or 6 mm. behind the corneal margin. The fragment, readily seen with the ophthalmoscope, occupied a position in the vitreous humor a little to the temporal side. It was also demonstrable with the roentgen ray. The eye retained 20/20 vision for eighteen months, when the vitreous clouded accompanied by signs of cyclitis. In view of the usual history of these cases, it seemed probable that the eye was headed for destruction. The patient was kept in bed for some weeks, given potassium iodide and atropine "drops" and the eye quieted, but with the formation of a secondary cataract. The surprising thing was that the roentgen ray now failed to show any evidence whatever of the fragment. Two or three pictures were made, all negative. Is it conceivable that a minute copper fragment lodged in the vitreous may be changed to a salt of copper and thus be no longer demonstrable by the roentgen ray?

DR. LLOYD MILLS, Los Angeles: Our conception of the incidence of sympathetic ophthalmia in relation to retained foreign bodies is to a large extent based on the faulty German statistics made as a result of the Franco-Prussian war in 1870. In that report approximately 100 per cent of cases of sympathetic ophthalmia were stated to have been the result of eye injuries of this sort. During the first year of the war, a study of the cases up to that time showed that the original statistics were entirely incorrect. There had been many cases of retention of multiple foreign bodies in the posterior segment of both eyes with reasonably good sight, and at that time I made the prediction that we should have to change our attitude toward retained foreign bodies. That opinion was confirmed by a follow-up study of military surgery of the eye published four years later. I am fully in accord with Dr. Bulson that we shall have to be much more conservative in our handling of these cases. I have seen a number of cases in which multiple foreign bodies have been retained with reasonably fair to good vision.

DR. MELVILLE BLACK, Denver: About thirty-five years ago I saw a man who lost one eye when a box of dynamite caps exploded. The other eye had a small particle of copper in or near the center of the vitreous that glistened and shone like steel under the ophthalmoscope. His vision was not materially disturbed. The point of entrance was through the sclera posterior to the ciliary body. We watched this man for twelve or fifteen years and he still retained normal vision. He never had any reaction whatever and the spot could be seen up to about ten years after the injury, when it completely disappeared, as in Dr. Green's case. Another man picked up a can of dynamite caps and, dropping one back, caused them to explode. One eye was completely destroyed and was enucleated. The other eye had a traumatic cataract, which was extracted. The vitreous was full of moss-like material which prevented any view of the fundus. This was finally absorbed. Finally he got something like 20/30 vision. I could see very distinctly by the ophthalmoscope a scar on the nasal side of the fundus. This was before the days of the roentgen ray, so I do not know whether the foreign body was in the region of the scar. Several years

later this man had detachment of the retina and completely lost his vision.

DR. J. E. JENNINGS, St. Louis: I saw a man with iritis and no vision. About twenty-six years previously he was working at an anvil and something struck his right eye. It was sore, but finally quieted down and did not give him any trouble until this attack of iritis. I found a little bluish scar on the sclera that I thought might be the place of entrance of a foreign body. I made a small opening into the vitreous, and on applying a giant magnet I pulled out a piece of steel that had been in the eye more than twenty-six years without causing any trouble. A further complication of this case was that we found an eye-tooth under that eye that had a pus cavity at its tip. It was taken out, and now the question is, Was the iritis due to the tooth or was it due to the piece of steel lodged in the eye? There is one thing to remember about a foreign body in the eye, and that is that sympathetic ophthalmia is much more likely to occur in children than in adults.

DR. ALBERT E. BULSON, JR., Fort Wayne, Ind.: The removal of a foreign body from the posterior segment of the eye does not insure saving either eyeball or sight, as experience proves. The cases cited indicate that nonintervention is quite as satisfactory in a good proportion of cases. The prognosis may be better if the foreign body is removed promptly after the injury, provided it can be accomplished without too much trauma; but in most of such cases, the prognosis will not be improved. Those cases that present difficulties in removal will do just as well or better if left alone, and those in which the ciliary body has been injured may be included in this class, as under any circumstances they offer a relatively unfavorable prognosis because they usually go on to inflammatory and degenerative changes. Even the presence of copper in the eye is not as dangerous as is generally supposed, as evidenced by cases reported in the paper and by discussants. If we can save an eye, even though it may be lost eventually through inflammatory and degenerative processes that may occur, it seems to me we are justified in avoiding the vigorous efforts that sometimes are used to extract foreign bodies, and which often result in the prompt loss of sight and perhaps the eyeball in consequence. Patients prefer a perfectly blind eye to an artificial eye. I am pleased that Dr. Mills has called attention to the German conception of sympathetic ophthalmia caused by the retention of foreign bodies within the eyeball, which conception seems to have had a false basis. An exception should be made in those cases in which the foreign body has passed through the ciliary region, as such cases are more dangerous than those in which the foreign body reaches the posterior segment involving the ciliary region.

Science and Tradition in Medicine.—The story of the struggle lasting for centuries, and even down to our own day, between the men who caught the vision of a science of medicine based on research and exact knowledge, and those who so held to tradition resisting all change is a glorious, if sad one. No literary romance equals it in human interest and dramatic power. It was a grim struggle of a few great souls, whose direct contact with nature had opened before them a new world of thought and experience, against the ignorant opinion based on authority and tradition of the vast majority of the men of their day, and especially those of the great profession to which they belonged. The tragedy of it all is seen in the fact that the names we glorify today are in the main those who in their own generation suffered all but martyrdom for their efforts to free human knowledge from the trammels of tradition. As modern science was only in its beginning, and as there was no body of correlated knowledge from which to draw, it was wholly natural that medical schools would continue to be esoteric and traditional even down to modern times. The real struggle for modern medicine began when biology, physics and chemistry invaded the domain of medical instruction and demanded a place with anatomy and physiology.—Troy, H. M.: The University's Function in Medicine, *Canad. M. A. J.*, November, 1926.

RADIOACTIVE MATERIAL, AN INDUSTRIAL HAZARD?

FREDERICK B. FLINN, PH.D.
NEW YORK

In 1923, the attention of the United States Radium Corporation was called to the possible existence of an industrial hazard in its plant at Orange, N. J., by the statements of a dentist, who suggested that the condition of one of his patients might be due to previous industrial exposure there.

During the last four years, there have been five deaths among former employees of this plant who had been engaged in painting the dials of instruments with luminous paint. Pathologic observations in these cases, and in those of one or two other employees of the company, call for an explanation as to their causes.

The pathologic conditions consisted of a necrosis of the jaw, which had been observed to follow the removal of a tooth or dental intervention of some other kind, accompanied by severe anemia terminating in death. After such dental intervention, there developed a very rapid form of necrosis which necessitated operative procedure at weekly intervals to combat the sepsis. In the later stages of the disease, these necrotic areas presented a liquefaction of a gelatinous nature. The treatment also required that a free drainage be maintained, for unlike the more common forms of necrosis, if the wound appeared to be clean and was permitted to heal, it closed only to manifest later on a recurrence of the condition.

This necrosis of the jaw is said by dentists who treated the cases to differ from phosphorus poisoning, ordinary necrosis or typical osteomyelitis only in the number of the areas involved and their isolation from one another.

The etiology of jaw necrosis is fairly well understood and includes such systemic infections as syphilis, tuberculosis, scarlet fever and typhoid. Inorganic poisons and drugs such as phosphorus, arsenic, mercury, and hydrogen peroxide may act either by local application or by systemic absorption. In addition to dental lesions, such as alveolar abscess and pyorrhea alveolaris, a large proportion of the cases of jaw necrosis have their genesis in dental work. In phosphorus jaw, we may have a direct action on the tooth tissue, but so far as is known, radioactive material has no specific action on this tissue.

Radium and roentgen-ray treatment have, however, been known to cause necrosis. But in radium necrosis of the bone, which may not occur for months or even years after the exposure, porosity is first noted, which gradually develops into complete disintegration and sequestration. This bony disintegration is in marked contrast to the gelatinous liquefaction noted in the later stages of the cases under discussion. This gelatinous consistency suggests a bacterial invasion, and maceration by the secretions of the mouth. As a matter of fact, the five cases reported were complicated by syphilis, joint trouble, and Vincent's angina.

The plant at Orange had practically shut down when I began my investigation of this problem, which made it impossible to conduct a thorough study of the exposure of the employees on an average working day. Fortunately, Dr. Cecil K. Drinker[1] had made a brief

1. Castle, W. R.; Drinker, K. R., and Drinker, C. K.: Necrosis of the Jaw in Workers Employed in Applying a Luminous Paint Containing Radium, J. Indust. Hyg. 7: 371 (Aug.) 1925.

survey shortly after the attention of the officials of the plant had been called to the matter. Dr. Drinker's conclusions were that on account of the excellent general hygienic conditions under which the work was conducted in this factory, and from his own study of the pathologic effects of zinc, the necrosis was due to the employees' habit of pointing their brushes between the lips and thus permitting the ingress of small amounts of radioactive material to the oral cavity.

The question as to how prevalent the early stages of necrosis are among other girls who have worked in this plant is a matter of dispute. Several of the dental surgeons who have treated these employees believe that they have detected the incipient signs of bone degeneration in a number of cases by means of roentgenograms taken of the jaws. Other competent dental surgeons who have examined the same films deny that any bone changes have taken place. Several of these suspected patients have had abscessed teeth which the attending dentist refused to extract because he was afraid of precipitating this necrotic condition. These teeth were extracted by other dentists, the gums healed normally, and no signs of any trouble appeared.

Between four and five thousand girls in this country and in Europe have been employed from time to time in dial painting. The Orange plant has employed all together 375 girls, the number working at any one time varying from twelve to more than 200, depending on industrial conditions, as this is a seasonal occupation. The average employee remained with the company from one to two years, while some steadier workers continued for five or even six years. Among the employees examined by us, a number have been engaged in this work for a period of from six to nine years.

The luminous paint used in painting consists of a specially prepared zinc sulphide mixed with small amounts of radium or a mixture of mesothorium and radium salts, and very minute amounts of copper, manganese and cadmium. The radioactive compound is added in a soluble form to an emulsion of zinc sulphide, and precipitated out with an alkaline sulphate with constant stirring. It is hard to conceive of the radium or thorium sulphate being in anything but a very finely divided condition which must be adsorbed by the zinc sulphide. The amount of radium or mesothorium present varies, according to the grade of material required, from 0.7 mg. to 3 or 4 mg. per hundred grams of zinc sulphide. This material is given to the girls in gram portions in bottles, and they mix it with an adhesive compound in a small porcelain crucible by means of a glass rod and then thin it out to the required consistency with distilled water. Some of the girls are rather energetic in this mixing, and I have noticed droplets of the mixture on their persons and clothes as well as on the benches. The crucible is held in one hand during this operation, and some of the paint is apt to get on the fingers thus engaged. The girls were observed to touch their hair and other parts of the body with these fingers, and it was surprising how luminous the parts of the body touched became when "flashed" and then examined in a dark room. The aprons which the girls wore shone when inspected in the dark room after being returned from the laundry as if the paint had been set in the washing process. No luminosity on the body has been detected where actual contact with the paint by means of the brush, hands or splashing could not explain it. The girls on being questioned confirmed this observation. The paint is easily washed off the person with soap and water.

The paint is applied to the dial by means of a small camel's-hair brush. After application to the dial, the brush is dipped in water and then wiped on a cloth. It has been the custom to point the brush after dipping it in the water by drawing it between the lips. It is on account of this habit that the radioactive paint has been held responsible for the pathologic condition under discussion. It has been suggested that particles of radioactive substance became lodged between the teeth or in the roof of the mouth, and caused an irritation that ended in necrosis. I cannot subscribe to this explanation because my inquiries indicate a general use of the tooth brush among the employees. The passage of food and fluid through the mouth would also tend to dislodge any particles, especially as tests show that the adhesive compound is dissolved by the saliva. If a particle did become lodged in the oral cavity, it would be a quantity so minute as to make it highly improbable that it could cause any irritation tending to necrosis. Another theory is that the particles of radioactive substance may penetrate into the cancellous structure of the bone through the open spaces caused by pyorrhea. It might be possible that during an almost daily exposure some absorption of radioactive particles did take place, just as pus or infectious germs are absorbed in these pyorrheal open spaces.

A group of four girls were requested to point their brushes on cloths for a week, and at the same time to keep account of the amount of paint used during that period. The residue of material left on the cloth corresponds to the paint left on the brush after it has been dipped in water. The results are given in table 1.

TABLE 1.—*Amount of Paint Used*

	Paint Used, Gm.	Paint on Cloth, Gm.	Radium Content, Mg.
C. M.	1	0.043	0.00073
L. P.	2	0.205	0.0026
A. D.	10	0.342	0.0043
B. W.	10	0.512	0.0065
Average for 10 Gm. of paint used		0.576	0.0072

The question naturally follows: If the girls should ingest the quantity of paint represented by the residue on the cloth, would it remain in the body indefinitely or would it be excreted? To determine this point, I have conducted a series of feeding experiments with animals lasting several weeks. During the entire time, the excreta were collected, and the radium content determined. To confirm the results found by an analysis of the excreta, the animals were killed at the conclusion of the experiment and the radioactivity of the ashed carcasses was determined. The alpha ray electroscope was used in determining the radioactive deposits. The results of these experiments showed that approximately 98 per cent of the radioactive material contained in the paint was excreted within a few days after the exposure had ceased.

To determine whether the luminous material had an irritating effect on the mucous membrane of the oral cavity, the gums of a number of guinea-pigs and goats were painted with it daily for a period of six months. During this time no irritation of the gums or mouth in any of the experimental animals was detected. A roentgen-ray examination showed no bone changes, but such changes could hardly be expected to occur in six months. To reach a conclusive result, a series of animals should be studied over a period of years.

The sides of a number of the animals were shaved and painted daily with luminous material for a period of two weeks. No irritation of the skin was detected either during the time that the paint was being applied or at any time after the exposure had ceased. Three collaborators in the laboratory painted areas on the arm, and permitted the paint to remain for twenty-four hours. No erythema developed at any time after the removal of the paint, though the areas were under observation continuously for two weeks. Questioning of the employees also failed to reveal any instances in which "burns" had been noticed in any place where the luminous material had come in contact with the skin.

It is generally conceded that the first indication of an exposure to radiation is to be found in the blood picture. Among the changes noted were:

1. The rapid and profound destruction of lymphocytes, noted even with relatively short exposure.
2. The destruction of red corpuscles under prolonged exposure.
3. The signs of blood destruction and lack of regeneration in the bone marrow.
4. A modification of the normal relations between corpuscles and plasma, resulting in the formation of noncorpuscular intravascular thrombi or fibrin formation within or outside the vessels.

Mottram [2] calls attention to the fact that the red cells are not as sensitive to radiation as are the leukocytes, and that a sustained low level of the latter should be considered as an indication of undue exposure to radiation. In fact, he places so much emphasis on this that he recommends that persons presenting a white count consistently below 6,000 should be removed from exposure until the blood has become more normal.

Another test as to the effects of exposure to radiation was made in our laboratory on animals injected with a solution of radium, to determine the presence of radioactive deposits in the living body. For this purpose, the gamma ray and the emanation electroscope were used. Both proved very sensitive in recording deposits.

Approximately two thirds of the employees at present working at dial painting in this country have been examined by us, and others in England have been examined by competent medical men. This examination included, besides the usual observations, a careful inspection of the oral cavity, a roentgenogram of the jaw, a complete blood count, and, whenever possible, electroscope tests for determining the presence of radioactive deposits.

About half of these employees used luminous material containing mesothorium instead of radium. The factories using this material obtained it from the same source as the Orange plant. The observations seemed to be the same as for radium. Dental films worn by the employees, and placed in the various work rooms, showed that the workers received the same exposure as reported by Drinker for those employed in the Orange plant.

Inquiries have failed to reveal a single case of jaw necrosis either in this country or in Europe among employees, outside the cases reported in the Orange plant. Each employee was questioned as to any dental work, especially extraction, that she had undergone since beginning the painting of dials. Fifty per cent have had teeth extracted since they began working in the industry, the number extracted varying from one to nine. All report that there were no ill effects from this form of dental intervention. One employee was discovered who had recently suffered a double fracture of the femur, which had knitted promptly. She had been engaged in radium painting for five years. Actual examinations of the oral cavity showed that no necrosis of the jaw existed, and no irritation of the mucous membrane other than pyorrhea. The pointing of paint brushes in the mouth proved to be a common habit in all the factories inspected here and abroad. Inquiries also revealed the fact that, although each employee was given her own brush, they at times took one another's brushes, which habit furnishes an excellent method for conveying infection.

A summary of the results of our examinations of the blood is given in tables 2 and 3.

TABLE 2.—*Dial Painting Employees*

Red Blood Count		White Blood Count	
1.6 per cent between	4 and 4.5	60.0 per cent less than	6,000
65.1 per cent between	4.5 and 5	19.1 per cent between	6,000 and 7,000
28.5 per cent between	5 and 5.5	15.2 per cent between	7,000 and 8,000
4.8 per cent between	5.5 and 6	23.8 per cent between	8,000 and 9,000
		22.2 per cent between	9,000 and 10,000
		16.9 per cent between	10,000 and 11,000
		11.8 per cent over	11,000
Neutrophils		**Lymphocytes**	
3 per cent less than	60	46.5 per cent between	20 and 25
95.2 per cent between	60 and 72	42.0 per cent between	25 and 27
1.8 per cent over	72	11.5 per cent between	27 and 29
Large Mononuclears		**Eosinophils**	
85.8 per cent between	3 and 8	All fall within the normal range.....	2 to 4
14.2 per cent over	8		

The hemoglobin was normal in each case, as were the pulse and blood pressure. No menstrual changes nor bleeding between periods from the time of initial employment to the time of examination was discovered.

For the sake of comparison we are able, through the courtesy of Dr. Larimore,[3] to give a summary of the blood pictures of a group of 253 Y. W. C. A. girls (table 3).

TABLE 3.—*Y. W. C. A. Girls*

Red Blood Count		White Blood Count	
10 per cent less than	4	28.6 per cent less than	6,000
47.4 per cent between	4 and 4.5	20.5 per cent between	6,000 and 7,000
36.0 per cent between	4.5 and 5	19.1 per cent between	7,000 and 8,000
5.6 per cent between	5 and 5.5	20.3 per cent between	8,000 and 9,000
1.0 per cent between	5.5 and 6	8.8 per cent between	9,000 and 10,000
		2.4 per cent between	10,000 and 11,000
		2.0 per cent over	11,000
Neutrophils		**Eosinophils**	
24.8 per cent less than	60	29.6 per cent less than	1
60.4 per cent between	60 and 72	65.7 per cent between	1 and 4
14.8 per cent over	72	4.7 per cent over	4

Unfortunately, data are lacking to compare the lymphocyte and large mononuclear counts.

This group consisted of supposedly normal persons who had been exposed to no industrial hazard. The average red count for the group was 4.4, with extremes of 2.8 and 5.7. The average white count was 7,200, with extremes of 3,200 and 12,000.

A further examination of the tables does not indicate in any way that the workers engaged in painting dials had been exposed to radioactive material. In studying the figures, I have separated them into groups according to the length of time the employees have been working with the luminous material. If the luminous paint is a

2. Mottram, J. C.: The Red Cell Blood Content of Those Handling Radium for Therapeutic Purposes, Arch. Radiol. & Electroth. **24**: 345 (April) 1920.

3. Larimore, Louise D.: Personal communication to the author.

hazard, one has every right to expect that those girls painting with it for the longest period would give some indication of that fact, or at least that a certain percentage of the number would. My analysis is given in table 4.

TABLE 4.—*Blood Counts of Groups*

	Blood Counts			
	Red	White	Neutrophils	Lymphocytes
4½ years and up	4.86	8,350	64.5	25.7
From 2 to 4 years	4.99	8,200	64.4	24.8
From 1 to 2 years	4.96	9,050	65.1	25.1
Less than 1 year	4.83	9,530	64.9	25.7

Table 5 is the blood picture during several months of two men who had been working in the crystallizing room, where radium and mesothorium are handled in large quantities and in a more concentrated form than anywhere else in the process of manufacture.

One employee, who has been crystallizing radium or coming in contact with it for fifteen years, tells me that his white count is never over 4,500, and while belittling this fact, he admits that he is easily susceptible to infections.

All electroscopic tests to ascertain the presence of radioactive substances in the bodies of the painters of luminous dials were negative.

From the facts here presented, I believe we are justified in arriving at the conclusion that an industrial hazard does not exist in the painting of luminous dials. The only evidence contrary to this conclusion rests on

TABLE 5.—*Effect of Radium on Two Employees*

	Date	Red Blood Count	White Blood Count	Polymorphonuclears	Lymphocytes
Case A.....	7/24/22	5,020,000	5,950	66	31
	10/ 3/22	5,300,000	6,300	76	18
	12/13/22	5,660,000	5,500	38	50
	2/12/23	5,510,000	7,750	44	52
	4/26/23	5,560,000	3,900	34	62
	7/23/24	4,960,000	3,500	70	28
	10/ 5/24	5,660,000	4,500	48	42
	12/15/24	5,570,000	4,900	66	24
	2/ 6/25	4,500,000	4,750	64	32
	5/ 7/25	5,350,000	3,600	58	34
Case B.....	3/18/21	5,020,000	5,800	74	20
	5/20/21	4,670,000	6,750	61	36
	7/22/21	5,240,000	5,400	74	24
	9/30/21	4,530,000	4,450	74	22
	1/ /22	4,700,000	4,500	70	28
	4/ 5/22	4,800,000	5,100	70	30
	6/14/22	4,690,000	4,650	66	30
	10/ 4/22	5,090,000	5,250	64	33
	12/15/22	4,780,000	3,900	62	16
	2/14/23	4,430,000	4,500	60	32
	10/ 5/23	5,150,000	4,050	60	36
	12/11/23	4,840,000	5,400	84	16
	2/12/24	4,600,000	5,550	60	36
	8/ 1/24	4,550,000	5,150	74	26
	10/ 8/24	6,130,000	4,650	..	..
	12/ 6/24	5,100,000	6,850	80	20
	2/ 6/25	4,600,000	4,200	66	30
	5/ 1/25	4,230,000	5,450	66	28

the fact that five employees at the Orange plant of the United States Radium Corporation have died from some cause that cannot be determined at this date. Statistically, the evidence is against the assumption that a hazard exists. If it were not so, we would have every reason to expect reports of other cases among the four or five thousand girls who have been engaged in this work in Europe and in this country. Furthermore, cases should have made their appearance in factories other than the Orange plant, as other girls have used the same materials and have worked as long as the girls who died, and in many cases longer. In addition, more time has elapsed in some of these cases since the first exposure than had elapsed between the first exposure and the date of death of any of the Orange employees.

The girls who died all worked together at the same bench, sometime between the years 1917 and 1922. A diagnosis of syphilis as a contributory factor appears on the death certificate of one of them. I am informed on good authority that a brother of another has suffered from an obstinate pathologic jaw condition. He never came in contact with radioactive paints. In other words, these cases are by no means clean cut. Vincent's angina has been known to produce a similar pathologic picture, ending sometimes in death. Bacterial infection has not been ruled out in a satisfactory manner. Other factors were present besides exposure to radium and mesothorium.

437 West Fifty-Ninth Street.

THE EXCRETION OF LEAD BY NORMAL PERSONS *

ROBERT A. KEHOE, M.D.
GRAHAM EDGAR, FRED THAMANN
AND
LESTER SANDERS
NEW YORK

In the spring of 1925, in the course of an extensive investigation of the excretion of lead in the human subject, certain results were obtained which are sufficiently at variance with previous opinion and observation, and which are of such intrinsic importance as to merit their presentation apart from the problems being investigated. The results, detailed in the following paragraphs, show that the secretion of lead in the urine and feces of apparently healthy, normal men is a matter of almost uniform occurrence.

METHODS OF ANALYSIS

It developed that the method proposed by Fairhall,[1] in the hands of the laboratory staff, gave results not so consistent or accurate as were desired. After extensive study, this method was slightly modified into the following procedure:

Analysis of Urine.—The samples of urine were received in gallon jugs of the type used for fruit juices. The volume was measured, and the samples were made ammoniacal soon after they were received. After standing for at least twelve hours, the samples were filtered on 18 cm. folded filter paper, care being taken that all of the precipitate was transferred to the filter. Without being washed, the filter paper was transferred to a silica or porcelain dish, and after being dried on a steam plate, was ignited in an electric muffle furnace at a temperature not exceeding 600 C. When the organic matter had been completely destroyed, the residue was treated as follows: The ash was moistened carefully with distilled water, and 5 cc. of concentrated hydrochloric acid was added, together with enough water to make the volume about 25 cc. The mixture was digested on a steam plate, and was filtered into a 400 cc. beaker, any residue being washed six times alternately with hot 10 per cent hydrochloric acid and hot water. (The filtrate in the beaker should contain all the lead. The residue is usually insignificant, and in these experiments has been disregarded.)

* From the Eichberg Laboratory of Physiology, University of Cincinnati, and the research laboratory of the Ethyl Gasoline Corporation, Dayton, Ohio.

1. Fairhall, L. T.: J. Indust. Hyg. 4:9 (May) 1922.

The solution was neutralized by adding 25 per cent sodium hydroxide solution until a faint turbidity persisted. If too much sodium hydroxide was added, the solution was treated with hydrochloric acid until it was perfectly clear and sodium hydroxide again added until a faint turbidity appeared. In some cases addition of sodium hydroxide caused no turbidity, even after the sample was distinctly alkaline to methyl red. To avoid excess of alkali in these cases, methyl red was added to all samples. When the samples contained sufficient calcium phosphate to give the turbidity mentioned, the reaction of the indicator was ignored. In all other cases, the sample was made just alkaline.

The solution was diluted to 300 cc. and after cooling, if necessary, was treated with hydrogen sulphide gas for one hour, and allowed to stand over night. The mixture was filtered on a 12.5 cm. Whatman no. 40 filter paper, any precipitate being transferred to the paper by means of freshly prepared hydrogen sulphide water acidified with 1 cc. of concentrated hydrochloric acid per liter. The paper and its contents were transferred to the beaker in which the sulphide precipitation was made. The sides of the beaker were washed down with 25 cc. of warm (1:1) hydrochloric acid containing 10 drops of concentrated nitric acid. The mixture was digested with acid until all sulphides had been dissolved and the paper was thoroughly white. The solution was diluted to 50 cc. with hot water, and was filtered, the residue being washed fifteen times with hot water. To the filtrate (about 400 cc.) was added 4 drops of a solution of methyl red, to which it was made just alkaline with 25 per cent sodium hydroxide, then just acid with (1:2) hydrochloric acid, after which 1 cc. of (1:2) hydrochloric acid was added in excess. This was diluted to 300 cc. and after cooling was treated with hydrogen sulphide gas for one hour and allowed to stand over night.

The mixture, was filtered on a 12.5 cm. Whatman no. 40 filter paper, the precipitate being transferred to the paper by means of freshly prepared hydrogen sulphide water containing 1 cc. of concentrated hydrochloric acid per liter. The beaker was washed carefully with this wash water, and the filter was washed ten times. The sulphides were dissolved from the paper with from 10 to 20 cc. of hot (1:1) nitric acid, the solution being caught in the beaker in which the precipitation was made. The paper was washed fifteen times with hot water. The sides of the beaker and the inside and outside of the tube from the hydrogen sulphide generator were washed with hot (1:1) nitric acid. The solution was evaporated to 5 cc., diluted to 25 cc. with hot water, and filtered through a 7 cm. filter paper into a 150 cc. beaker. The beaker was carefully washed with hot water, and the filter paper was washed fifteen times with hot water. The filtrate and washings were evaporated to 25 cc. and neutralized with 25 per cent sodium hydroxide, free from iron and aluminum, a slightly alkaline water solution of phenolphthalein being used as indicator.

The solution was made faintly pink with alkali; the color was just discharged with 5 per cent acetic acid, and 2 cc. of 5 per cent acetic acid was added in excess. The solution was brought to boiling, and 1 cc. of 1 per cent potassium chromate solution was added. The mixture was placed on the steam bath for one hour, and was allowed to stand in a warm place over night. It was then brought to boiling, filtered on a 7 cm. ashless filter paper, the beaker being washed carefully with hot water, and the filter paper being washed fifteen times with hot water. Any residue was dissolved in from 5 to 15 cc. of cold (1:2) hydrochloric acid, the paper being washed at once with cold water, the solution and washings being caught in the beaker in which the chromate precipitation was made. The sides of the beaker and the stirring rod were washed with cold (1:2) hydrochloric acid.

A standard solution of lead (1 cc. = 0.1 mg. lead) was made by dissolving 0.1560 Gm. of pure lead chromate in 200 cc. of 10 per cent hydrochloric acid and diluting to 1 liter. This solution was checked colorimetrically against standard potassium dichromate solution. A 1 per cent solution of chemically pure s-diphenyl carbazide in glacial acetic acid was used as a reagent. For the analysis an aliquot portion of the solution of lead chromate obtained above was taken, which should contain not more than 0.40 to 0.50 mg. of lead, the best results being obtained with about 0.20 mg. The sample was diluted to about 100 cc. in a Nessler tube, and an equal volume of water to which had been added a quantity of hydrochloric acid equivalent to that in the sample taken for analysis was put into another Nessler tube. Two cubic centimeters of diphenyl carbazide reagent was added to each tube. From the color which developed in the tube containing the sample, a rough visual estimate was made of the quantity of lead present, and an amount of standard lead chromate slightly smaller than this was added to the tube that was to be the standard. The colors of the two solutions were compared, and standard lead chromate was added drop by drop to the standard tube until an exact match was obtained.

Analysis of Feces.—The samples of feces were received in quart jars. They were transferred to silica dishes and dried on a steam plate to "apparent dryness." No attempt was made to bring them exactly to constant weight. The sample of dried feces was ashed in a silica dish in an electric muffle at from 500 to 600 C. When the organic matter was apparently destroyed, the residue was moistened with water, acidified with hydrochloric acid and digested on the steam plate for some time. The mixture was then filtered, the residue washed with hot dilute hydrochloric acid and hot water, and the filter paper and its contents returned to the silica dish in which the original ashing was done. After being dried on the steam plate, the dish and its contents were returned to the furnace and ashed again at from 500 to 600 C. The residue was

TABLE 1.—*Lead in Materials Used in Tests*

Article	Quantity	Lead in Mg.
Pyrex	1.0205 Gm.	0.22
Silica dish	3.5415 Gm.	Nil
Soft glass funnel	1.4395 Gm.	0.13
Mason jar	1.2775 Gm.	0.24
Glass jug	1.0555 Gm.	0.02
Concentrated hydrochloric acid, specific gravity 1.19	100 cc.	Nil
Concentrated nitric acid, specific gravity 1.42	50 cc.	Nil
Sodium hydroxide, 25 per cent	200 cc.	Nil
Ammonium hydroxide, 28 per cent	50 cc.	Nil
Whatman filter paper no. 40	25-12.5 cm.	0.03
Munktell filter paper no. 1 F	25-7 cm.	Nil

treated with water and hydrochloric acid as before and, after being digested on the steam plate, was filtered, the filtrate being added to the first filtrate. The residue may contain traces of lead, and may be brought into solution with hydrofluoric acid and added to the main solution. Our experience had shown, however, that after careful washing, the residue will not contain an appreciable quantity of lead, and it seemed justifiable to neglect it in these analyses. The solution obtained from the feces was diluted and neutralized with 25 per cent sodium hydroxide, exactly as described above, for the analysis of urine.

The remainder of the analysis was exactly like that described for the analysis of the urine, except that the second hydrogen sulphide precipitation was repeated, a third precipitation being made exactly as the second. The precipitation as chromate and the colorimetric estimation are made just as in the case of the urine.

MATERIALS AND GENERAL TECHNIC

Lead free reagents were employed throughout. It is possible to purchase them in the market, but they must be carefully tested for lead. A quantity of each stock reagent sufficient for an entire analysis was tested, and was found free of even a trace of lead before being used. Pyrex glass beakers, flasks, wash bottles, etc., were employed throughout. Soda glass funnels were employed. The dishes used for ashing the feces were 400 cc. opaque silica; those used for ashing the urines were of opaque silica or porcelain. The containers for the samples were of soft glass.

The ordinary technic of good analytic work must be observed most scrupulously if satisfactory results are to

be obtained in analyzing organic material for small quantities of lead. Precautions as to the cleanliness of the laboratory and the apparatus are essential. In the present case, no other work than the analyses in question was carried out in the laboratory employed for the purpose.

It has been shown [2] that ammonia precipitates practically all of the lead from urine, it being carried down with the alkaline-earth phosphates. The procedure is so much more convenient than that involving the evaporation of the urine that it was employed throughout. Our experiments have verified the adequacy of the method. If it is in error at all, it is in the direction of giving slightly low results.

In table 1 of the data, it is shown that the glassware employed contained traces of lead when considerable weights of it were decomposed with hydrofluoric acid and analyzed; but it appears that no appreciable lead can enter the samples from this source, since the amount of glass actually dissolved is extremely small. This is borne out by the fact that numerous blank determinations on reagents were obtained when the same glass and the same technic were used.

In the colorimetric estimation of lead, a standard colorimeter may obviously be employed in place of the Nessler tubes to advantage, but this was not available in the present investigation. In any case, it is essential that the amounts of lead in the standard and the unknown be as nearly identical as possible.

It is obvious that other methods than the colorimetric might be employed for the final estimation of lead after the precipitation is chromate.

SOURCE AND NATURE OF DATA

The subjects were workmen taken at random in one city. An employment agency was requested to provide white men of all types, just as they appeared in search of employment. Sixty-five men were obtained, among whom were farmers, common laborers, skilled workmen, sailors, chauffeurs and clerks. Every part of the United States was represented in their former places of abode. Most of them were youths or in middle life. They were employed by the day and released at night. All subjects were instructed as to just what was desired of them and maintained under supervision during the entire period of their daily employment. Each man was provided with a quart Mason jar and a gallon jug labeled with his name and a number, these having been carefully prepared in advance so as to be chemically clean. The containers were kept under observation at all times, the excretions being collected directly in them during the day time only. Specimens were collected over a sufficient period of time to provide not less than 2 liters of urine and a fair sized sample of feces.

Each man was questioned carefully as to his occupation over a period of not less than five years previously, with special reference to exposure to any type of lead. Leading questions as to employment in industries known to involve lead exposure were asked in every case. When the accompanying data show that a given subject has no history of exposure to lead, it is to be remembered that every effort was made to discover some possible source of exposure in his case. A history of previous illnesses was recorded for every subject, and at the same time careful questions sought out the presence of any present symptoms of illness.

2. Fairhall, L. T.: J. Biol. Chem. **60**: 485 (July) 1924.

A careful physical examination, an analysis of urine, a hemoglobin determination (by the Dare method) and an examination of stained smears of blood were made in each case. Several smears were prepared for each subject, and were stained by a slight modification of Wright's method, in which a slight overstaining was produced. The method so used was found satisfactory after an experimental study of the various methods for showing stippling and polychromasia of the erythrocytes.

TABLE 2.—*Data of Lead Determinations in Sixty-Five Men*

Subject	History of Exposure to Lead	Lead in Milligrams: In Feces: Entire Sample	In Feces: Per 100 Gm. Dry Weight	In Urine: Entire Sample	In Urine: Per Liter
1	None	0.16	2.26	0.17	0.09
2	Occasional painting	0.53	2.22	0.24	0.16
3	1½ years pipe joining with lead	0.35	0.92	0.06	0.04
4	Enamel manufacturing one year; occasional painting	0.27	2.88	0.16	0.10
5	None	0.37	1.23	0.10	0.05
6	Occasional painting at home	0.15	1.25	0.21	0.08
7	Trucking metals including lead; steam fitting	0.45	0.93	0.13	0.23
8	Occasional painting	0.17	1.95	0.12	0.08
9	Coal miner	0.35	6.73	Nil	Nil
10	None	0.33	1.35	0.02	0.01
11	Marble worker; occasional painting	0.74	3.27	0.14	0.06
12	None	0.23	1.17	0.12	0.07
13	Painting and plumbing occasionally	0.68	3.13	0.16	0.13
14	Occasional painting	0.62	0.75	0.14	0.10
15	Painting five months recently	0.05	0.43	0.09	0.05
16	Plumber's helper occasionally	0.32	1.05	0.07	0.03
17	No history obtained	No sample		0.08	0.17
18	None	0.14	0.35	0.10	0.07
19	Plumber's helper, 1923	0.06	1.58	0.13	0.07
20	Painting three years recently	0.38	2.30	0.03	0.02
21	Painting three months, 1925	0.24	0.39	0.04	0.02
22	Farming; none	0.24	1.07	0.15	0.11
23	Mixing paint three months, 1924	0.30	1.08	Nil	Nil
24	None	0.28	1.35	0.04	0.02
25	Engine painting three years	0.30	1.42	0.05	0.02
26	Vulcanizing tires, 1923-1924	0.30	3.30	0.07	0.06
27	Painting six months, 1924	0.41	1.59	0.16	0.10
28	Plumbing and pipe fitting	No sample		0.17	0.11
29	Occasional painting	0.18	0.39	0.20	0.07
30	Plumbing	0.55	1.87	0.13	0.09
31	None	0.28	0.88	0.13	0.09
32	None	0.37	1.49	0.20	0.14
33	Occasional painting	0.56	1.35	0.06	0.04
34	None	0.33	0.73	0.18	0.12
35	None	0.43	0.45	0.18	0.09
36	Plumbing two years	0.42	1.99	0.18	0.12
37	Painting two weeks recently	0.53	2.09	0.08	0.05
38	None	0.31	0.92	0.18	0.10
39	Occasional painting and plumbing	0.34	1.80	0.14	0.10
40	Painting regularly	No sample		0.20	0.10
41	None	0.21	1.54	0.13	0.06
42	Tinner's and roofer's helper, 1923	0.40	1.48	0.18	0.10
43	None	0.33	0.72	0.15	0.09
44	None	0.20	0.73	0.11	0.06
45	Painting for three years before 1920	0.37	2.03	0.04	0.02
46	Plumber's helper, 1923; storage battery manufacturer, 1924	0.14	0.61	Nil	Nil
47	None	Lost	....	0.13	0.08
48	None	0.24	0.81	Nil	Nil
49	None	0.32	0.90	0.11	0.07
50	None	0.09	0.80	0.05	0.03
51	Short period painting, 1923	0.20	2.28	0.17	0.10
52	Occasional painting	0.24	1.97	0.11	0.06
53	None	0.60	2.42	0.20	0.08
54	None	0.43	0.42	0.30	0.23
55	Plumbing and painting	0.24	0.53	0.15	0.11
56	Street cleaning	0.23	0.33	0.12	0.09
57	None	0.37	1.91	0.04	0.06
58	None	0.72	1.44	0.07	0.06
59	None	0.16	1.36	0.15	0.08
60	None	0.11	1.64	0.15	0.09
61	Plumber's helper	0.22	1.29	0.10	0.08
62	None	0.14	0.50	0.07	0.05
63	Tire manufacturer, 1924	0.19	2.21	0.05	0.03
64	Plumber's helper, 1925	0.50	1.52	0.07	0.10
65	Storage battery plant, 1919; plumber's helper, 1925	0.54	2.31	Nil	Nil

DATA

The mass of data obtained is too unwieldly for presentation. However, essential facts are shown in the accompanying tables. It is hardly proper to make comparison of the lead excretion of the subjects until it is reduced to some standard, since the specimens differ in quantity, and represent varying periods of excretion.

An arbitrary standard has been selected, which may or may not represent a proper basis of comparison, in that calculation has been made in terms of unit weight of feces and unit volumes of urine.[3] Table 2 shows the history of lead exposure, if any, the actual lead found in the feces and urine, and the calculations in terms of unit weights and volumes.

COMMENT

The accompanying data show that all of the subjects studied were excreting lead either in the urine or feces, and in most instances in both. The finding of lead in the urine demonstrates definitely that lead had been absorbed into the tissues of these subjects. However, a careful consideration of the subjective symptoms and physical findings, which may not be given in detail in a brief paper, fails to show that any one of these subjects showed evidence of lead poisoning.

There were abnormalities of various kinds, such as may be found in any group of men, but these abnormalities were not found combined in any one person in such a way as to suggest the existence of lead poisoning. The constancy of the analytic findings when considered against the variation in occupation, mode of existence and geographic environment of these subjects, through considerable periods of time, suggests that there may be an important source (or sources) of lead absorption which is so general as to bring about the absorption and excretion of lead by most persons. One is led to question whether such a general exposure could be occasioned by anything less widely distributed than food materials. (The drinking water of the average American community does not contain lead sufficient to produce this result. Analyses of the water from the community in which these subjects were studied has failed to show the presence of lead.)

The dust from city streets has been found almost invariably to contain traces of lead. It is undoubtedly augmented by industrial exposures, but in many of the foregoing cases there is no history of exposure to the usually recognized sources of lead absorption. Moreover, there is no constant relationship to be found between quantity of exposure and rate of excretion. It is well to point out that the diagnostic value of qualitative determinations of lead excretion fails completely in the face of the facts demonstrated herein. Nor will quantitative determinations avail anything until a quantitative significance is experimentally and clinically established.

SUMMARY

1. In a series of sixty-five apparently normal, healthy workmen, chosen at random and found to be secreting lead in the feces or urine or in both, not one was suffering from lead poisoning.

2. There are certain unknown means of exposure to lead so widespread that most persons have absorbed appreciable quantities, as evidenced by their secretion of lead.

3. There is no diagnostic value in qualitative lead determinations in the excreta of persons suspected of having lead poisoning.

4. There is at present no quantitative expression of lead secretion in man which may be said to be significant of impending or present lead poisoning.

3. Experimental determinations show that the ash in the feces is uniformly approximately 15 per cent of the dry weight. The lead content of the feces may therefore be calculated from the accompanying data in terms of milligrams per gram of ash.

CLINICAL VARIATIONS IN NEGRO PROCTOLOGY

THE VENEREAL FACTOR *

CURTICE ROSSER, M.D.
DALLAS, TEXAS

Two years ago before this section,[1] I called attention to the rôle enacted in rectal pathologic changes in the negro by that racial peculiarity which had previously[2] been termed the fibroplastic diathesis, the inherent ethnic predisposition to develop adult connective tissue in excess in response to trauma of any type.

From the analysis of cases presented at that time, it was indicated that rectal disease in general is equally prevalent in the Caucasian and in the negro; that cancer, pruritus and fissure are less common in the negro, while the inflammatory lesions, including fistula, are more often found in the black. Benign rectal stricture, accompanied by other manifestations of the fibroplastic diathesis, was eleven times as frequent in the negro, while hemorrhoids occurred only half as often. In addition, microscopic studies of a series of excised hemorrhoids from both races seemed to indicate that fibrosis is the dominant feature of the negro hemorrhoid, which suggests that the hemorrhoid effaces itself in the black.

A continued interest, inspired by some years of observation in two dispensaries largely attended by negroes (the rectal clinics of Baylor Medical School and the City-County Hospital of Dallas), is responsible for this brief presentation of a second controlling factor in anorectal disease in the race.

The high incidence of syphilis in the negro has not been demonstrated to be attributable to any predisposition or lowering of resistance, but is believed due, as in the habitual occurrence of gonorrhea in both sexes, to earlier adolescence, living conditions, loose sex standards, and consistently poor hygiene. Many writers have noted the unusual general incidence of venereal disease in the negro.

Hazen [3] found that 22 per cent of 2,000 negroes with skin disease had syphilis; Spingarn [4] reports that in one army camp more than 90 per cent of the colored noneffectives were venereal, most of them chronically; Lynch [5] concluded that from 50 to 60 per cent of the major class had syphilis, and McNeil,[6] in a Texas clinic, found the Wassermann reaction positive in 30 per cent of apparently healthy negroes and in from 40 to 50 per cent of sick negroes.

My own records would indicate that none of these estimates are too high. I have found gonorrhea almost universally admitted by colored male clinic patients; in the female, it is difficult to elicit the history, but the incidence of leukorrhea and pelvic infection would lend to the opinion that more than 75 per cent have been infected.

It is logical, therefore, to expect that the venereal factor should tincture the clinical observations in

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Rosser, Curtice: Rectal Pathology in the Negro, J. A. M. A. **84**: 93 (Jan. 10) 1925.
2. Rosser, Curtice: Proctologic Peculiarities of the Negro: The Fibroplastic Diathesis, Am. J. Surg. **37**: 265 (Nov.) 1923.
3. Hazen, H. H.: Syphilis in the American Negro, J. A. M. A. **63**: 463 (Aug. 8) 1914.
4. Spingarn, A. B.: Social Hygiene **4**: 333 (July) 1918.
5. Lynch, K. M.; McInnes, K., and McInnes, C. F.: South. M. J. **8**: 45, 1915.
6. McNeil, H. L.: Syphilis in the Negro, J. A. M. A. **67**: 1001 (Sept. 30) 1916.

a very large group of anorectal cases in the race in question. My own observations have affirmed this expectation.

Primary syphilis of the anus, while seen, is rare; other observers[7] have noted the low incidence of extragenital primaries in the negro. In the condylomatous overgrowth following chancre in a young male negro, the Wassermann reaction became positive, and cutaneous secondaries appeared. The anal chancre at first presents the typical picture, with elevated, sharply defined border, induration and thin scanty discharge, but secondary infection appears early because of the location and poor hygiene. Martin[8] of Detroit has called attention to the modification in the course of the disease which results from moisture, tissue maceration and fecal contamination, and also[9] states that the more than thirty cases seen in one year in the receiving hospital were in white patients.

Secondary syphilis is perhaps most frequently seen in the form of the moist papule or mucous patch between the buttocks adjacent to the anus; in the rectal clinic the first diagnosis of syphilis is frequently made from this observation. From lack of local cleanliness and the tendency to fibrosis, the papule often hypertrophies, forming flat condylomas; less often, excessive hypertrophy results in large vegetative masses of tissue with an offensive odor. The anus is surrounded and may be blocked by a fissured, protuberant, ulcerative mass, which sometimes invades the sphincter. Microscopically, the entire malpighian layer is seen to be thick and tortuous with thickening of the papillae and defective hornification.

Author's Cases of Rectal Stricture

Negro..... 26 White..... 8

Etiology	Negro Cases Number	Per Cent
Syphilis	6	23
Gonorrhea	6	23
Tuberculosis	2	7
Chancroid	1	4
Operative	1	4
Pellagra	1	4
Undetermined	9	35

Tertiary anorectal syphilis I believe to be much more common in the negro than in the white. As an instance, 23 per cent of my own cases of rectal stricture, as shown in the table, were definitely syphilitic, the etiology being determined from positive blood examination plus local evidences of gumma or ulceration. Tertiary lesions, as Pennington[10] has pointed out, occur in the rectum proper as a rule, and in my experience have been an occasional cause of rectovaginal fistula in the female. The anus may be invaded. I recall one case in a young negro woman in which the ulceration included the anus and margins, resulting in a stenosis together with a "scallop" of undermined skin tags at the anal border.

Gonorrhea is rare in the male, common in the female rectum, which suggests that the infection results from vaginal extension and infected syringe tips. In dispensary practice, the case is chronic when first encountered, although a history of definite acute onset with pains, tenesmus and discharge of blood-tinged pus is obtained. The mucosa is secondarily infected with pyogens, and stricture is present or impending. It would seem that the gonococcus probably implants in the anal crypts, as it is not believed to survive in the mucosa, although I have not been able to establish this.

As a frequent accompaniment of gonorrheal rectitis, the pointed moist venereal wart, or acuminate condyloma, is found. A great variety of forms are possible, with few or multiple projections, and arising from one or more pedicles. On section, a central lumen, with a thick granular layer, and absent hornification, forms the basic unit of the growth.

Anal chancroid I have encountered again most commonly in negro women. The ulcer is anal, not rectal, and apparently a contact infection rather than the result of sodomy. The usual lesion is an infection in both commissures, although I have seen the anus completely encircled. The finding of Ducrey's organism is difficult as a rule, but autoinoculation, effective in twenty-four hours, is a useful diagnostic procedure.

The microscopic appearance of a typical excised ulcer, as reported by the pathologist, was as follows:

> An epithelial surface is seen which is broken by an area of ulceration; the top of the ulcer is composed of fibrin, blood cells and necrotic débris. Beneath this is seen a moderate infiltration with polymorphonuclear, plasma and round cells, this exudation extending deeply and passing also beneath the normal mucosa. There is no fibrosis and little blood vascular changes, with the exception of a swelling of the endothelium. Special stains for *Spirochaeta pallida* failed to reveal its presence.

Venereal rectal lesions in the negro are notably indolent in nature, and always progressive in the absence of vigorous local treatment. The anal chancroid, unless "sphinctotomy" is done and the ulcers are cauterized, tends to invade the upper anus and to extend peripherally; gonorrheal proctitis, aided by the rectal tendency to fibrosis, progresses to stricture, and syphilitic ulcerations, because of secondary infection, have not been, in my experience, markedly affected by general, without local, therapy.

710 Medical Arts Building.

ABSTRACT OF DISCUSSION

Dr. J. Rawson Pennington, Chicago: I am afraid that I cannot add very much to the paper, as I am not connected with any institution that has negro patients. However, I quite agree as to the effect of the fibroblastic diathesis. It is well known that uterine fibroids are comparatively more common in the colored race. Again, in the last few years there has been a great influx of negroes to our section of the country and one often sees on the streets persons with enormous keloids. Some of these are actually repulsive on account of their extent and the decided contrast between the bright red, exuberant tissue and the dark skin. It has been my observation that gonorrhea is found only occasionally in the rectum in the white race.

Dr. J. F. Montague, New York: In New York we also observe the relatively greater frequence of venereal rectal diseases among the negroes. Pruritus ani is mentioned as being of less frequent occurrence in the negro. I believe the explanation of this is to be found in the difference of mentality existing between the white race and the negro, rather than in any variation in the perianal skin. The negro, being possessed of less delicate sensibilities than the white, is relatively immune to those subminimal stimuli that cause pruritus. When the irritant stimuli are more intense, they are directly productive of pain. In regard to the greater frequency of stricture, I also agree and believe that it is due not only to a greater incidence of syphilis among the negroes but also to the marked tendency to fibrous tissue overgrowth. In the

7. Thompson, L., and Kingery, L. B.: Am. J. Syph. 3: 384 (July) 1919.
8. Martin, E. G., and Kallet, H. I.: Primary Syphilis of Anorectal Region, J. A. M. A. 84: 1516 (May 23) 1923.
9. Martin, E. G.: Personal communication to the author.
10. Pennington, J. R.: Rectum, Anus and Pelvic Colon, Philadelphia, 1923.

pathologic studies of stricture that I have made and reported in the literature, I have found that to a great extent the stricture represents just such overgrowth of fibrous tissue. That is one reason why antisyphilitic treatment of a syphilitic stricture is not as successful as it theoretically should be. The overgrowth of connective tissue is not a specifically syphilitic process and will not resolve under antisyphilitic treatment. In cases suspected of syphilis, one is afforded an easy means of diagnosis by applying the dark field in connection with any suggestive sore or ulcer in the rectum or anus. Dark field examination will frequently show *Spirochaeta pallida* even while the Wassermann reaction is still negative.

DR. CURTICE ROSSER, Dallas, Texas: I was particularly anxious to bring into the paper some suggestion that there is such a thing as syphilitic stricture of the rectum. We have gone too far afield from the original idea that all strictures were syphilitic, which has been disproved; but it is a definite possibility that a substantial number of rectal strictures are syphilitic, and that also a substantial number in negroes are caused by other venereal diseases. As Dr. Montague said, the presence of fibrous tissue in rectal disease is due to the combined venereal etiology and to the fibroplastic diathesis.

A PRACTICAL TREATMENT OF DUODENAL ULCER *

WALTER C. ALVAREZ, M.D.
ROCHESTER, MINN.

During the last ten years I have been impressed by the fact that so few of the patients with duodenal ulcer whom I have seen have ever had any treatment which a specialist would regard as adequate. In many cases the diagnosis had not been made, but even when it had been, most of the patients had had to suffer for years with nothing more than a prescription for alkalis and a warning against the use of meat or greasy foods. And later, when, as so often happened, one of these patients would return to report joyfully that since taking food every two hours he had lost all his distress, I could not help feeling bad that the medical profession as a whole had not yet learned this therapeutic trick, a trick which is so simple and yet so efficacious. With all the incurable and but slightly relievable patients daily knocking at our doors, surely we can ill afford to send away in pain any to whom we might so easily give comfort.

PRESENT-DAY DIAGNOSIS AND TREATMENT

As some may feel that the situation with regard to duodenal ulcer is not so bad as I have painted it, I shall here present data which my associates and I have recently obtained by questioning 100 patients who presented themselves at the Mayo Clinic with the typical roentgenographic findings of duodenal ulcer. Most of them gave also the characteristic history of recurrent attacks of pain, distress, acid stomach, and so forth, relieved by the taking of food. They had had symptoms for periods averaging ten years, and had seen on an average four physicians. Only twenty had ever been put to bed, and three of these went to the hospital simply because of a severe hemorrhage. Eleven of them had had what might be called a "Sippy cure," lasting from three weeks to four months, and the other nine had been given frequent feedings for periods averaging nine days. Besides these twenty, there were nine who had been given food every two hours for periods averaging twenty-five days. Several had been treated by Sippy himself. Forty-eight could not remember ever having received any dietary instructions, but nine had been told to eat no meat; five, to avoid rough foods, and three, to specialize on them; five were told to avoid fried foods and pastry; five, to avoid acids; five, to live on milk and eggs; four, to adopt a "soft diet"; two, a "light diet"; one, to take soup, and one, 7 quarts of milk a day. Two were told to "be careful," and one to "eat no meat, starches, acids or sweets." Most of them were allowed to return to a full diet within a few days or weeks after a "cure." The one thing that the majority (fifty-nine) of the patients had been given was a prescription for an alkaline powder, so we must conclude that that constitutes the usual treatment for ulcer in America today. Eight had been operated on for appendicitis without much or any improvement.

The next point to be noted is that the diagnosis of ulcer, which was probably the correct one in most of the cases, had been made in only thirty-three. If to this group is added another of twenty-nine in which ulcer had been suspected, it is found that when the diagnosis had been made with more or less certainty, only 18 per cent were given a fairly complete medical treatment.

Many of the patients went for ten or fifteen years without a diagnosis, and then obtained it only by going to a large city where roentgenograms were taken. It was encouraging, however, to find that more and more, even of the country physicians, are learning to recognize duodenal ulcer solely from the characteristic history.

DUODENAL ULCER ONLY RECENTLY RECOGNIZED

This syndrome of duodenal ulcer is often so characteristic and so striking that those of us who encounter it every day can hardly understand why any one should miss it. We need only to turn to our textbooks, however, to find wherein the trouble lies. Duodenal ulcer was an almost unknown disease until about twenty years ago, when men like the Mayos in America and Moynihan in England showed us how to recognize it. A large book on diseases of the stomach published in 1903 makes no mention of it; another published in 1913 has a few words about it, and a third, also published in 1913, confuses it with gastric ulcer. Allbutt's System, published in 1908, describes only the perforating and bleeding types, and barely mentions hunger pain. Osler's System, published in 1914, devotes a few lines to duodenal ulcer in the article on ulcer of the stomach, and a few more in the article on diseases of the intestines. The subject was evidently not considered important enough to have a section all its own, and the great significance of hunger pain was not emphasized. Even in the 1920 edition of Osler and McCrae's "Practice," the description of duodenal ulcer is so merged with that of gastric ulcer that both pictures lose in clarity. As the general practitioner can hardly be expected to be more up to date than his textbooks, it is not to be wondered at that he often misses the diagnosis. He is really to be congratulated on making it as often as he does, and he should be helped by having set before him a truer and more striking clinical picture.

DEFICIENCIES IN TREATMENT

The next question is: Why, even when the disease is diagnosed, is it so poorly treated? Again it would seem that those of us who should be leaders have been mainly at fault. Under the heading of "treatment" the older textbooks advocate the use of the von Leube and Lenhartz diets, together with a number of useless or dangerous drugs like silver nitrate; the newer ones,

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* From the Division of Medicine, Mayo Clinic.
* Read before the American Gastro-Enterological Association, Atlantic City, N. J., May 3, 1926.

since 1915, recommend the Sippy diet. Now, the Sippy diet is not to be despised; it works; but it is too elaborate for the general practitioner and his poorer and more ignorant patients. It calls for, first, considerable enthusiasm, faith, and training on the part of the physician; secondly, a hospital with excellent interns, and, thirdly, a patient who has plenty of time and money to spend on his cure. The busy practitioner can hardly spend his time pumping his patients' stomachs to see whether they are properly alkalized, even if they can afford to pay for it; and few of them will care to spend a month in the hospital with its expenses and the concomitant loss of income, particularly when they are told, as told they should be, that within six months or a year, perhaps before the bills are all paid, they are likely to be back exactly where they were before. Whether the profession likes it or not, most of the patients with duodenal ulcer are going to keep at their work, and even the man who tries a Sippy treatment in one of his attacks will not come back for another every time he has a recurrence. Most of the time he will get by as best he can with soda and food between meals.

Under these circumstances, it is obvious that attention should be devoted to the working out of the simplest form of an ambulant treatment: one that will have some prospect of being used by the average physician and the average patient. It will probably not be the best treatment available, but better a fair one that is used than an excellent one that is not used. For that matter, however, it may not be so poor after all. Remissions occur commonly after the most inadequate treatment; they occur commonly after no treatment at all; and I know of no statistics to show that the remissions after Sippy treatments are the longest of all. Dr. Murray, who at my suggestion is questioning 100 or more patients on this point, has so far found nothing to indicate that in the same individual the period of relief after a Sippy cure is likely to be longer than one of those periods which comes after little or no treatment. The longest remission encountered so far in this series was in the case of a man who remained well for fourteen years after a very careless treatment. He, incidentally, had a mouth full of foul teeth.

Honestly, what justification could be given for most of the regulations in regard to the medical treatment of ulcer? Beyond the fact that Ewald or Boas or Sippy laid them down years ago, what data are there to show that they are really essential? Is it not highly desirable to know what is the most important feature of the treatment, whether it is rest in bed, frequent feedings, alkalization, or the eradication of focal infections? Should there be a preliminary period of starvation, and if so, how long should it be? How long should the patient stay in bed? How long should he have frequent feedings, and of what should they consist? Is there any real reason for giving them iced? How long should the patient stay on soft diet? When should he return to full diet? Will he get any better result if he stays for months on frequent feedings? About how long does it take for the ulcers to heal, or do they often heal after they have become chronic? Is there any real advantage in adhering to a smooth cellulose-poor diet? Are meats, meat extracts, starches, fats or greasy foods harmful? How many patients are permanently cured by medical treatment, and why are there so few follow-up studies to determine this point?

It is obvious that none of the measures now in use can be essential, because the majority of patients have long remissions without them; but so far as usefulness goes there is one that stands out from all the others, and that is frequent feedings. For years this measure has given me good results even when used alone, and this is the point that I wish to emphasize in this paper.

INDICATIONS FOR TREATMENT, MEDICAL AND SURGICAL

Before starting a patient on medical treatment, one naturally asks himself whether that particular case is suitable for it; and in making that decision he will take into consideration a number of indications about which both surgeon and internist are in fair agreement. First a word about gastric ulcer, because there the problem is complicated by the ever-present danger of malignant degeneration. Even when the crater is small the patient cannot be assured that he hasn't a cancer; and especially when the gastric acids are low, if the physician lets him drift on with medical treatment he assumes a tremendous responsibility. Fortunately there is no need for such worries with duodenal ulcer, as cancer in the first few inches of the bowel is exceedingly rare.

Patients with duodenal ulcer causing marked obstruction at the pylorus should generally be operated on as soon as they have been prepared by having the stomach washed and the body fluids restored. When there is considerable scarring and mechanical closure of the pylorus, it is foolish even to attempt medical treatment, and not infrequently all that the physician accomplishes by it is the loss of his patient's respect. Furthermore, it is in such cases that surgical treatment produces its most gratifying results. The surgeon had better be called in if the patient has had a number of fairly thorough and more or less successful medical treatments, and especially if the ulcer is becoming chronic and unresponsive to dietetic management. He should be called, also, if there is a strong suspicion that there are complications such as cholecystitis, appendicitis, or perforation into neighboring tissues, or if the ulcer has shown a tendency to bleed severely.

In deciding on the method of treatment, one will also have to take into account the occupation of the patient, and his intellectual, financial and perhaps marital status. A laborer, particularly an unmarried one, will often have to be operated on because he will not or cannot diet, or because he does not have the intelligence to keep it up after his worst symptoms are over. Furthermore, even if he is careful and gets well, he will probably have a recurrence as soon as he begins hard physical labor again.

My experience on this point makes me feel that not enough attention is paid to the dangers of exercise and especially of the movements that cause pulling on the duodenum. One must remember that the first portion of the duodenum serves as a sort of hook from which the stomach swings like a hammock, and I believe that this anatomic arrangement has something to do with the tendency toward ulceration at that point. Men often say that it is the hard work in spring or fall, plowing or pitching hay, which brings their recurrences; and I have seen a number of cases in which, even after operation, the patient could stay well only by avoiding lifting and bending. In fact, many persons can obtain permanent relief only by changing to a sedentary occupation.

Medical treatment, therefore, should be reserved for the early cases: for the young men and women with their first attacks, and for those who have the leisure and money to spend on what may turn out to be but

temporary relief. Medical treatment may also be offered to those who do not feel sick enough for operation, to those who on account of business and family reasons must put it off for a while, and to those who cannot afford the time. It will have to be used when the patient is too poor a surgical risk, and it will be the last resort when an operation has failed to bring relief, and when there is no evidence that a gastrojejunal ulcer, a poorly made gastro-enterostomy, marked gastric stasis, a new ulcer, or some other serious complication is calling urgently for further operative intervention.

THE AMBULANT TREATMENT

If the patients are to stay at work, they must have three good meals a day. Many of them are thin and below par, and any treatment that keeps them that way is undesirable. The three meals are chosen from a "smooth-diet" list[1] which is given to them. This is an ample diet in which only the scratchy material, such as is found in raw fruit, bran, many of the green vegetables, celery, salads, nuts, gristle, and berries, is excluded. Such care may perhaps not be necessary, but there is no privation about it, and theoretically it would seem worth taking. Meat is not forbidden as the patients seem to do just as well with as without it, and from a theoretical standpoint one can argue just as well for as against it.

The essential element of the treatment is the food between meals. In the morning a mixture should be made up which may consist of a quart of milk, two eggs and either a gill or half pint of cream, depending on the patient's need for extra calories. If milk is not well tolerated, a certain amount of thin gruel made from any cereal may be substituted. Robinson's Scotch groats or Robinson's barley flour is very suitable. The patient takes a bottle of this mixture to work with him and drinks a glassful, about 6 ounces, at 10 a. m., and at 2, 4, 8 and 10 p. m. He should have another glassful by his bed in case he should wake during the night. There does not seem to be any theoretical or practical reason for icing it. He takes his breakfast at 7:30 a. m., lunch at 12 m., and dinner at 6 p. m. If he should be traveling or if he should forget to take his bottle with him, he can get a milk-shake or malted milk at a soda fountain. He may also carry around with him a box of crackers of some kind.

Occasionally I have found cases in which, in addition to the diet, the usual mixture of magnesia, sodium bicarbonate and bismuth was helpful, but in the last thirteen years I have not prescribed it more than five or six times. Much can be said for the theory of alkalization, but the fact remains that in all those years my results with frequent feedings were so satisfactory that rarely did the patients feel the need of going back to their soda.

In some cases the pain will recur within an hour and a half, and the food must then be taken every hour and a quarter. In my experience, however, cases as severe as this do not do well on medical treatment. In practically all uncomplicated cases the patient gets immediate relief from his distress and begins to gain in weight and strength. He is asked to rest as much as possible on Saturdays and Sundays, and he is forbidden to do any lifting or gardening. He must give up his "daily dozen" and he probably had better give up his golf. Walking is about the only exercise that is allowable.

He is now comfortable; perhaps he feels that he is cured, and the next question is, how long must he keep up this regimen? I always insist that he keep it up for six months or a year. I think that one of the big advantages of the ambulant treatment is the fact that the patient is started out on a regimen which he can carry on for months. He is advised from the first that he must continue it for a long time, and he therefore has no illusions about a speedy cure. Medical treatment in a hospital is much like an operation; after going to all that trouble and expense, both patient and physician are inclined to feel that a cure has been worked, that the trouble is gone, and that further precautions are unnecessary. Physicians forget that even an acute shallow ulcer produced experimentally in a dog's duodenum takes about three weeks to heal, so a chronic one should take much longer.

It may be, of course, that adhering to a careful diet for many months will not increase the chances of obtaining a permanent cure. I used to think it would until I saw recurrences in some of my patients who assured me that they were still faithfully continuing the smooth diet and the frequent feedings. One man with an old chronic ulcer obtained such perfect and gratifying relief from the diet that he kept taking food between meals for more than two years, yet when on Christmas day he ate a few nuts and drank a glass of wine, his old distress was back in a few hours.

I think it wise for these patients to take food at 9 or 10 a. m. and at 3 or 4 p. m. for months and years after they are apparently cured. I say "apparently" because I do not know whether a patient with chronic duodenal ulcer is ever permanently cured by medical treatment. Many have relief from pain and indigestion just so long as they persist in being careful. They cannot exercise as they did before; they cannot drink, they cannot smoke, and they finally get sick and tired of being semi-invalids. They want to be perfectly well and care free again, and sooner or later they ask for an operation.

In the last few years many physicians have been so impressed by the suggestive experiments of Rosenow that they have begun their treatment of all patients with ulcer by removing tonsils and dead teeth. Although striking results occasionally seem to be obtained in this way, and although on general principles the eradication of focal infection is a good thing, until there are statistics to prove that patients so treated do better than others, I do not think this point should be insisted on, especially when it means that a young man or woman will thereby be condemned to the wearing of plates. I would refuse to treat a man if he wanted to go on swallowing pus every day from pyorrhea pockets and carious snags, but in the present state of our knowledge I should not feel justified in promising him any improvement from the removal of dead teeth. I should want him to know that it was a gamble, with the odds probably against him.

DIAGNOSTIC VALUE OF THE TREATMENT

The average physician seems to have no conception of how helpful the use of frequent feedings can be in a diagnostic way. Not infrequently he will see a patient with a fairly typical history but a smooth cap, or a deformed cap and no definite history of ulcer. If this patient is put on two-hourly feedings and obtains prompt and complete relief he almost certainly has a duodenal ulcer, because no other lesion of the digestive tract responds so characteristically. If complete relief

1. This list may be found in my "Mechanics of the Digestive Tract," New York, Paul B. Hoeber, 1922, p. 111; in Nelson's Living Medicine, 5: 454, 1920, and in Oxford Medicine 3: 44, 1921.

is not secured, it means that either a mistake in diagnosis has been made or that the duodenal ulcer is complicated by perforation and scarring, or by some other lesion, such as cholecystitis or chronic appendicitis.

SUMMARY

Out of 100 patients seen at the Mayo Clinic with probable duodenal ulcer, only eleven had had a Sippy treatment lasting three weeks or more; nine more had been put to bed for short intervals, and another nine had been given frequent feedings. Altogether, fifty-two had had some change made in their diet, and forty-eight had been practically untreated. They had suffered for an average of ten years, and had seen an average of four physicians. The diagnosis had been made in thirty-three cases and suspected in twenty-nine more.

The failure to recognize the disease can be ascribed mainly to the fact that the clinical picture of duodenal ulcer has only recently become clear—so recently that the descriptions in textbooks are still inadequate. The failure to treat intelligently is also due to the deficiencies of the textbooks, which describe only one type of management and that, one which is not practical for most patients.

The essential feature of the treatment outlined is the taking of food between meals. That, unaided, will bring comfort to many patients with uncomplicated duodenal ulcer.

THE PROGNOSIS OF TETANUS

ASTLEY P. C. ASHHURST, M.D.
PHILADELPHIA

A recent paper by Wainwright,[1] in which he comes to the conclusion that in the treatment of tetanus by antitoxin "intraspinal injections are harmful, increase mortality, and should be abolished," seems to call for a word of warning to the profession lest they be misled by the statistics he has assembled and abandon a safe and valuable method of treatment. He finds, as shown in table 8 of his paper, that among 243 cases personally reported to him in which intraspinal injection was used alone or in combination, the death rate was 61.7 per cent; whereas in 297 similarly reported cases in which it was not used intraspinally but was used by other methods, the death rate was 52.2 per cent. The same statistics show that when antitoxin was used intravenously only, the mortality was 63 per cent, but that when it was used subcutaneously alone, the mortality was only 39 per cent. Yet he does not conclude from this that it is better to use antitoxin subcutaneously than intravenously. The truth is that there are so many other items to be taken into account (the severity of the attack, the promptness of treatment, etc.), that statistics such as he has collected have scarcely any value. I have cognizance, for instance, of the case referred to in the accompanying table; it is recorded in Wainwright's tables in the series of deaths that followed treatment by intraspinal injection of antitoxin. Yet it is not credible that, without the intraspinal injection (given late in the disease, when the patient was almost moribund), the patient would have had a better chance of recovery.

Dr. Wainwright advocates intravenous injections of antitoxin, and every one who has studied the disease will agree with him that this is a valuable method of administration. The two series of cases on which Dr. Wainwright seems mainly to rely for support in his opinion that the intravenous method should be used to the exclusion of the intraspinal, are those reported by Dean[2] and by Friedlander.[3] Yet all of Dean's fourteen patients, as Dr. Wainwright notes, were soldiers and presumably had had prophylactic doses of antitoxin when first wounded, justifying one in the supposition that they were not of the most severe types. Friedlander's cases, amounting, with those personally reported to Dr. Wainwright, to twenty in all, showed a death rate of 40 per cent; he wasted on them amounts of antitoxin varying up to a total of 755,000 units in one case—a perfectly absurd amount in my opinion and one that can have had very little favorable influence on the disease. As far as my knowledge goes, such doses are totally unjustified; intraspinal injections of very much smaller amounts would, I am convinced, have had more effect.

Data of Fatal Case in Which Intraspinal Antitoxin Was Used (Included in Wainwright's Tables) *

Date	Temperature	Intravenous	Subcutaneous	Intraspinal
7.22.20	99	10,000	10,000	.....
7.23	...	30,000	.....	.....
7.24	...	20,000	10,000	.....
7.25	...	30,000	.....	.....
7.26	102	30,000	.....	.....
....	...	30,000	.....	.....
....	...	30,000	.....	.....
7.27	103	40,000	.....	.....
....	...	30,000	.....	.....
....	...	30,000	.....	.....
7.28	103	30,000	10,000	.....
....	...	40,000	.....	.....
7.29	108	30,000	.....	.....
7.30	103	30,000	.....	.....
7.31	...	.....	.....	.....
8.1	106	.....	.....	5,000
8.2	...	.....	.....	.....
Total		410,000	30,000	5,000
8.9.20 Died.				

* The intraspinal injection of antitoxin when the patient is almost moribund can have no favorable effect on tetanus. Repeated large doses of antitoxin intravenously are a waste of a very valuable remedy. Promptness in diagnosis, with immediate intraspinal and intravenous injection of reasonable amounts of antitoxin will give the lowest mortality.

I am a firm believer in the efficacy of intraspinal injections if given early; and it is amazing to me that any one with practical experience with the disease can remain unconvinced of the great therapeutic value of this method. When Dr. Charles L. Gibson of New York reported, in 1916, before the American Surgical Association, his interesting series of cases in which antitoxin was used intraspinally, I was sitting next to a surgeon who muttered gloomily to me, "You might as well inject so much ice-water." When I asked him if he had ever cured a patient of tetanus by injecting ice-water into his spinal canal, he shook his head still more gloomily.

PROOF OF EFFICACY OF ANTITOXIN

We have the right of belief in those things only which cannot be proved. I believe that antitoxin injected intraspinally has a specific action on the toxin already in the spinal nerve roots and in the spinal cord. However, I acknowledge that up to the present, at least so far as is known to me, this action has not been proved by laboratory studies; nor do I know how one would set about proving it. Our belief in its efficacy rests on inference:

1. *The Evidence of Intraspinal Intravital Stains.*—Dr. E. P. Corson-White, pathologist to the Philadelphia Orthopedic Hospital, at my request has made a number

1. Wainwright, J. M.: Tetanus, Arch. Surg. **12**: 1062 (May) 1926.

2. Dean, H. R.: Lancet **1**: 673 (May 5) 1917.
3. Friedlander: Am. J. M. Sc. **161**: 819, 1921.

of injections of methylene blue solutions into the subdural space of the lumbar cord in rabbits, in order to determine the distribution of fluids so injected. If the injection was not in too great quantity, the rabbits lived indefinitely. A few were killed after varying intervals, and in several instances the entire spinal cord and its nerve roots and their ganglions, even up to the base of the brain itself, were stained deep blue; in one or two instances the stain penetrated as far as the anterior ends of the optic tracts, and even stained the cerebrum in patches. Is it not reasonable to suppose that antitoxin when injected into the lumbar subdural space will reach all parts of the spinal cord?

2. *The Difficulty of Medicating the Spinal Cord by Intravenous Injections.*—This difficulty is well recognized by serologists in the treatment of cerebrospinal syphilis. To enter into a discussion of this aspect of intraspinal versus intravenous treatment, however, would lead too far afield.

3. *The Clinical Results of Intraspinal Injections of Antitoxin.*—The patients who recover from tetanus without receiving antitoxin by this route are exceedingly few; those who die if this treatment is used promptly are also very few. To refuse to employ antitoxin by the intraspinal route is, in the present state of our knowledge, absolutely unjustifiable. To use the intravenous or the subcutaneous route alone is as sensible as it would be to set a rabble of men and boys chasing a flock of sheep with the object of preventing them from entering a certain gate. The rational thing to do is to station a strong man at the gate, and even if a few sheep have passed inside before he gets there, he can head off the rest of the flock; while all that the rabble can do, chasing them from behind, is to grab the hind legs or the tails of the stragglers. The toxin circulating in the blood is like the flock of sheep; it is trying to enter the spinal cord along the motor nerves, to the peripheral ends of which it is carried by the blood stream. Intravenous injections do much good, it is true, but they only overtake the toxin from the rear. The antitoxin injected intraspinally, however, is, I believe, able to head off further ingress of toxin into the cord.

The diagnosis of tetanus must be made early, and treatment must be very prompt. I was called early one morning on the telephone by a physician's secretary, who said the doctor wished me to meet him that afternoon at 5:30 to see a patient in whom he suspected tetanus. I took the liberty of saying that if the doctor thought his patient had tetanus it was a criminal waste of time to postpone treatment until the afternoon. At the appointed time of consultation we met, and the diagnosis was confirmed. From what I learned of the case, it seemed to me that the diagnosis might have been made about twenty-four hours earlier; certainly efficient treatment should have been instituted at least ten hours before the time set for the consultation. Yet nothing had been done. And even after the diagnosis was confirmed by consultation, and though the patient had been all the time in a hospital supposed to be well equipped, it was then found that there was only an insignificant amount of tetanus antitoxin available, and several hours in addition were lost in trying to secure more. The patient died. If the diagnosis had been made early, and if efficient treatment had been prompt, there seems no reason why he should not have recovered.

I was operating one day on a boy with a five-day-old simple fracture of the elbow, with a fragment irreducible except by incision. During the operation, the boy had a general convulsion while under the influence of ether. This was a most extraordinary event. While I finished the operation, I kept thinking what could have given him a convulsion. I thought of tetanus. At the end of the operation, a search of his body revealed two healed punctures in the sole of one foot. Before he left the operating table, I gave him 10,000 units of tetanus antitoxin intraspinally. His first complaint on recovery from the anesthetic was of pain in the back of his neck. Stiffness and retraction of the neck, ankle clonus and positive bilateral Kernig's sign persisted for several days. The day after operation, he acknowledged that some days before he broke his elbow he had run a rusty nail into the sole of his foot, and had had no treatment for it. That boy had tetanus, and recovered from it because the diganosis was made early, and treatment was efficient and prompt.

The promptness of treatment does not always depend on the physician, because the patient may not come under his care early enough. But it is a disgrace to the physician to fail to recognize the disease promptly if the patient is already in his care, and it is inexcusable not to institute drastically efficient treatment simultaneously with the making of the diagnosis.

The aim should be: (1) to prevent the further absorption of toxin by abolishing its source (the infected wound); (2) to neutralize that which is being absorbed by immediate intravenous injection of from 15,000 to 20,000 units of antitoxin; (3) to neutralize that which has already been absorbed into the spinal cord by immediate intraspinal injection of from 6,000 to 10,000 units; (4) to administer enough spinal depressants, preferably chloral and bromides, by mouth or by rectum, to exert a physiologic effect, and (5) to keep the patient alive by feeding and nursing. All the antitoxin that is indicated should be given as nearly as can be all at one time and as soon as possible after the diagnosis is made.[4] That amount of antitoxin is enough to last for about eight days; by the end of eight days most patients will be convalescent and will require no more. In most cases, repeated doses of antitoxin are a pure waste of a valuable and very expensive remedy.

I have had twenty-three cases of tetanus under my personal care up to Sept. 1, 1926. In the whole series, there were eight deaths, including one death from pneumonia after apparent recovery from tetanus: this gives a mortality of 34.2 per cent. But if only those patients are counted in whom treatment was both early and efficient, there are eighteen cases with three deaths, a mortality of 16.6 per cent.

257 South Sixteenth Street.

4. Larger doses, intravenously (from 30,000 to 40,000 units) and intraspinally (from 10,000 to 12,000 units) are required if the antitoxin is not given promptly.

Medical Education as Preparation for Women for Marriage.—Few, if any, schemes of education are better than a sound medical education as a preparation and equipment for marriage. It should guide and strengthen a woman to perform "justly, skilfully and magnanimously" all the high and all the lowly tasks of married life. I think a wise student will see to it that in the absence of special reasons she will try to emphasize in her professional training and work those parts of the subject not only best fitted for a woman if she remains in professional practice, but most likely to be serviceable if and when marriage comes to her afterward.—Fletcher, Walter: *Lancet* **2**:742 (Oct. 9) 1926.

MUCOUS MEMBRANE FROM MIDDLE TURBINATE IN PLASTIC SURGERY OF EYE*

MEYER WIENER, M.D.
ST. LOUIS

Mucous membrane from various sources has been recommended for replacement of destroyed conjunctiva, in extensive symblepharon, and in restoration of the socket. Mucous grafts have been taken from the fellow eye or from that of a donor, from eyes of various animals, and from the vagina and prepuce; also from the inside of the lip and cheek.

Mucous membrane transplanted from the mouth and from the vagina was utilized by Stelwag.[1] Paton [2] used mucous membrane from the roof of the mouths of frogs, or the pharynx of rabbits. De Wecker [3] recommends human conjunctiva instead of rabbit's mucous membrane, and utilized the conjunctiva taken away in periridectomy for pannus, etc. Post [4] reported the transplantation of rabbit's conjunctiva for the cure of symblepharon, but with only temporary success, requiring subsequent autoplastic operations.

Woelfler [5] also failed in his use of rabbit's conjunctiva, but succeeded in obtaining good results from grafts taken from the vagina of women suffering from severe prolapse of the uterus.

Silex [6] was unsuccessful in all his attempts at using heterogenous grafts but one, and in that case he did not follow the case long.

The futility of obtaining permanent results with heterogenous tissue of any sort is now pretty well recognized. The difficulty of obtaining sufficient material from the fellow eye or from the mouth or lip in autogenous grafting is self-evident.

The psychologic element in suggesting the transplanting of tissue from the vagina or prepuce suggests a difficulty, besides the question of sterility, especially in the use of the former. Homogenous grafting of similar tissues from one person to another also involves objection, such as difference in blood types. The opportunity of obtaining sufficient normal conjunctiva from a human donor is almost negligible.

The suggestion of the use of nasal mucous membrane to replace conjunctiva was brought to my attention through seeing the relatively large amount of mucosa removed in the operation of turbinectomy. I first thought of utilizing the mucous membrane from patients other than my own. I was assured, however, by specialists in nose and throat that the middle turbinate of an adult could ordinarily be removed in its entirety without doing any harm to the patient. Acting on this information, I proceeded to take advantage of it in a case of contracted socket and was sufficiently encouraged to utilize it in two cases of symblepharon.

Care must be taken in removing the turbinate to avoid crushing or bruising. The removal of the mucosa from the bone requires time and watchfulness. The membrane can easily be torn or buttonholed with too much haste. I believe that it is best done with a sharp scalpel, holding close to the bone. When separated and spread out, the mucous membrane available is about an inch and a quarter in diameter, more or less.

REPORT OF CASES

CASE 1.—Miss D. J., aged 35, lost the left eye at the age of 10 when injured by a corn cob. The globe was removed by a general surgeon, leaving a contracted socket in which she was unable to use an artificial eye. A skin graft operation performed in 1918 permitted the use of a tiny shell eye which was unsatisfactory. The skin graft was in back of the socket; there was a marked entropion and profuse discharge. May 24, 1925, under local anesthesia, the middle turbinate was removed at Bethesda Hospital by Dr. W. E. Sauer, and covered with gauze soaked in physiologic sodium chloride solution. The patient was then given a general anesthetic; the socket was prepared for an Esser inlay above and temporally; mucous membrane was carefully dissected from the turbinate bone, and used to cover a piece of dentists' molding material, the epithelial side against the mold, which was then carefully inserted in the prepared cavity and sewed in place. Previous to insertion of the stent, a Hotz-Snellen operation was performed on the upper lid. On removal of the plate, a small artificial eye was inserted. The result was not entirely satisfactory, so that a second operation was performed at the Bethesda Hospital, June 25, the inlay being made below and temporally, the inlay being covered with mucous membrane from the turbinate removed from the other side of the nose by Dr. Sauer. July 1, during the night, the patient had profuse bleeding from the socket. A tight bandage was applied. July 2, the stitches and stent were removed. The tendency to bleed continued for nearly two weeks, and the socket remained quite sore to the touch for several months, with quite a bit of discharge. This was found to be due to a narrow, deep sinus which was relieved by curettement. The patient now has a well fitting eye in a roomy socket.

CASE 2.—G. S., a man, aged 42, had a large pterygium of the right eye operated on in 1917 and again in 1922 in Kansas City, Mo. Vision was impaired after the last operation. Plastic skin grafting for relief of symblepharon was done twice in 1923 and twice in 1924. June 30, 1925, fully two thirds of the right cornea was covered with a white skin graft, with the inner corner of the globe firmly adherent to the inner canthus. July 23, the patient had the right middle turbinate removed under local anesthesia at the Jewish Hospital. General anesthesia was then given, the scar was carefully dissected off the cornea, and the globe was released from its attachments. An inlay was then fitted, was covered with the mucous graft removed from the turbinate, and was sewed in place according to Gillies' modification of the Esser method. July 28, the stent came out. July 29, there was foul smelling, profuse discharge. This grew gradually less, with the cornea clearing and good abduction. At present there is only a small adhesion below and to the nasal side, which pulls on extreme abduction.

CASE 3.—Miss M. H., aged 33, had an extensive symblepharon of the right eye, the result of a lye burn in 1914. The eye was firmly held at the inner canthus. A large corneal scar involved the nasal third of the cornea. June 5, 1924, an operation with epithelial graft after the method of Gillies was performed under general anesthesia at the Jewish Hospital. The attachment was almost completely relieved, with good motion, but the patient was very much dissatisfied with the unsightly appearance of the white skin graft. Oct. 8, 1925, the skin graft was removed and the cavity filled with a mucous graft obtained from the middle turbinate removed by Dr. Sauer. There was considerable ecchymosis and some swelling of the lids. The stent was removed, October 14. The patient complained of severe pain. This pain and cloudy cornea continued for about a week, finally responding to hot applications and atropine, 1 per cent. The result at present is great improvement cosmetically, with almost complete freedom of motion of the globe.

COMMENT

There has been no discomfort or any seeming disadvantage to any of these patients resulting from the

* Read before the Section on Ophthalmology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Stelwag, in Wood's System of Ophthalmic Surgery **2**: 1457.
2. Paton, cited by Maynard: Ophthalmic Operations, p. 147.
3. De Wecker, in Czermak: Augenoertzlichen Operationen **1**: 318.
4. Post, G. E.: M. Rec., 1875, p. 203.
5. Woelfler: Arch. f. klin. Chir. **37**: 709.
6. Silex: Berlin. klin. Wchnschr., 1891, p. 721.

removal of the middle turbinate. The graft has taken in all. There seems to be no more shrinking or contraction than from epithelial grafts. The cosmetic results are far superior, and there is much less discharge than when the skin graft is used.

ABSTRACT OF DISCUSSION

DR. LLOYD MILLS, Los Angeles: Is there much contraction in these cases—as much as usually follows the use of a skin graft?

DR. MEYER WIENER, Los Angeles: I do not think there is any more contraction, and perhaps less with mucus grafting than with an epithelial skin graft. I should like to refer to something I did not speak of in the paper, and that is the technic of making a modified Esser inlay according to Gillies' method. I have always had difficulty in placing the stent covered with mucous membrane without disturbing the graft or the inlay. Esser suggested that we make the opening, prepare the cavity and then insert the mold covered with graft and sew it into place. It is not so easily done without disturbing the graft or the mold, so I place a couple of stitches before I place the inlay. While I am holding the mold in place, the assistant ties these two sutures, and the others on the other side, and that holds the mold in place without disturbing the graft. I think that helps a great deal in the success of the operation.

Clinical Notes, Suggestions and New Instruments

MICRO-KAHN REACTIONS*

R. L. KAHN, SC.D., LANSING, MICH.

It is not generally recognized among physicians that the Kahn test can be performed with a drop or even half a drop of serum with a high degree of accuracy. In isolated cases, especially when drawing blood from infants, it is often difficult to obtain 1 cc., the minimum amount required for a regular three-tube Kahn test. In such cases, this laboratory, during the last several years, has been reporting to physicians the results of a one-tube test, utilizing the amount of serum available.

One of the basic requirements of the Kahn reaction is the use of correct proportions of serum and antigen.[1] When this is adhered to, any measurable amounts of serum and antigen can be utilized in performing a Kahn test.

The following plan is being carried out when sufficient serum (0.45 cc.) is not available for a complete three-tube Kahn test:

1. If 0.3 cc. is available, a two-tube test is made, employing the two lesser amounts of diluted antigen (0.025 and 0.0125 cc.). The results are averaged as though a regular three-tube test were made.

2. If 0.15 cc. serum is available, a one-tube test is made, using the smallest amount of diluted antigen (0.0125 cc.). In this case, a definite precipitation reaction, such as ++++, +++ or ++, is read positive; all others are read negative. The results are reported "Positive (or negative) based on incomplete test; insufficient serum for complete (three-tube) Kahn test."

3. When less than 0.15 cc. serum is available, a test is made using a proportion of ten parts of serum to one part of diluted antigen. Thus, if only approximately one-half drop (0.025 cc.) of serum is available, the test is performed as follows: 0.0025 cc. diluted antigen is measured with a 0.1 or 0.2 cc. pipet graduated in 0.001 cc. and deposited at the bottom of a small tube of about 0.5 cc. diameter. With a similar pipet, 0.025 cc. serum is added close to the bottom of the tube. The rack is shaken three minutes, 0.2 cc. of physiologic sodium chloride solution is added, and the results are read. The report to physicians is made as in test 2, outlined above.

Similarly, Kahn tests can be carried out with 0.1 and 0.05 cc. amounts of serum, using 0.01 and 0.005 cc. of diluted antigen, respectively. Repetition of the test with physiologic sodium chloride solution instead of serum serves as the antigen control. Examination of the serum to establish freedom from cells and other particles serves as the serum control.

4. Micro-amounts of serum may be utilized not only for obtaining qualitative results with the Kahn test but for quantitative results as well. Thus, if 0.05 cc. serum is available, a test with 0.025 cc., described above, may be run to determine whether the reaction is positive or negative, and if positive, the remaining 0.025 cc. may be utilized for a quantitative procedure,[2] thus giving the clinician the actual potency of the serum in terms of syphilitic reacting units.

SUMMARY

Micro-Kahn reactions with minute amounts of serum, such as a drop or less, can be carried out with a high degree of accuracy. Both qualitative and quantitative microprocedures can be employed. Such procedures should prove of help to physicians in cases in which it is difficult to obtain sufficient blood for regular Kahn tests.

* From the Bureau of Laboratories, Michigan Department of Health.

1. Kahn, R. L.: Serum Diagnosis of Syphilis by Precipitation: Governing Principles, Procedure and Clinical Application of the Kahn Precipitation Test, Baltimore, Williams & Wilkins Company, 1925.

APPENDICITIS IN A PATIENT WITH A FETAL TYPE OF ILEUM AND CECUM GIVING RISE TO GALLBLADDER SYMPTOMS

LEWIS P. GLOVER, M.D., ALTOONA, PA.

G. K., a white man, aged 22, was admitted complaining of severe pain in the upper right abdomen, with pain about the umbilical region and lower right quadrant. There had been moderate attacks of pain along the whole right side of the abdomen for two weeks. The day before admission, the patient was seized with a sudden violent pain in the upper right quadrant of the abdomen just below the costal margin, which bent him double and nearly caused him to faint. He had been constantly nauseated, and for the past two days had been vomiting everything he had eaten. He had kept the bowels open with laxatives. A previous history of some indigestion had been obtained, but no constipation, vomiting or urinary disturbance had been present. The temperature was 97.4 F., the pulse 90, and the respiration 24. The temperature rose to 99 in twelve hours.

The patient was well nourished, slight, but in general good condition. Palpation revealed slight rigidity in the upper right quadrant with maximum points of tenderness over the gallbladder region and a little to the right and below the umbilicus. Except for slight icterus of the conjunctiva, the examination was negative. Tympany was present over the whole abdomen, but no masses were present. The blood count was 10,500 white blood corpuscles, 66 per cent polymorphonuclears, 16 per cent small lymphocytes, 3 per cent mononuclears, 3 per cent transitionals, 1 per cent eosinophils and 1 per cent basophils. Urine examination showed a very faint trace of albumin, a marked trace of bile, and many white blood corpuscles. It had an acid reaction. An indirect van den Bergh test was positive. The blood urea was 24 mg. per hundred cubic centimeters.

Appendicitis was suspected and a McBurney's incision was made. The ileum, cecum and appendix could not be found. A gallbladder incision was then made, and the ileum and cecum were found undescended with the ileocecal junction 1 cm. to the left of the gallbladder, and an acutely inflamed appendix 2.5 cm. long extending from the ileocecal junction and curling below the gallbladder. The appendix was removed. The gallbladder was normal. The incisions were closed without drainage and, except for considerable distention, the patient made an uneventful recovery in eleven days. On discharge, the urine was negative. The blood count was 5,200,000 red cells, 8,900 white cells, 28 per cent small lymphocytes, 2 per cent large lymphocytes, 1 per cent transitionals, 68 per cent polymorphonuclears, and 1 per cent eosinophils.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

HOMOCAMFIN. — Cyclosal. — *3*-methyl-*5*-isopropyl-△*2*-cyclohexenone dissolved in an aqueous solution of sodium salicylate.

Actions and Uses. — Methylisopropylcyclohexenone, the potent constituent of homocamfin, is claimed to have an action similar to camphor but to surpass it in intensity and rapidity of action on the heart and respiration as shown by animal experiments and clinical observation. This superiority over camphor is due in large part to its solubility in aqueous solution of sodium salicylate which secures prompt absorption.

The most important experimental work on which the claims for homocamfin are based is that of Gottlieb and Schulemann who found that methylisopropylcyclohexenone in the form of homocamfin was two to four times more active than camphor, since in morphinized rabbits an intravenous dose of one milligram stimulated the respiration, while two to four milligrams of camphor dissolved in water were required to produce a similar effect.

While homocamfin is rapidly absorbed when administered intramuscularly, it is absorbed almost instantaneously when administered intravenously; however, the stimulating dose and the convulsant dose are not far apart, and hence caution should be observed when it is used intravenously.

Homocamfin is used as a stimulant in cardiac failure, surgical shock, narcotic poisoning and respiratory failure.

Dosage.—For adults from 1.5 to 2 cc. of homocamfin solution 10 per cent; for children of two to twelve years from 0.5 to 1 cc.

Intravenously for adults 1 cc. of homocamfin solution 1 per cent; but this form of administration is not free from risk and should be reserved for emergencies.

Manufactured by The Bayer Company, Inc., Rensselaer, N. Y. (Winthrop Chemical Co., New York, distributor). U. S. patent 1,477,691 (Dec. 18, 1923; expires 1940). U. S. trademark applied for.

Ampules Homocamfin 10 per cent (for intramuscular use). Each ampule contains 2.2 cc. of a solution made by dissolving 10 Gm. of *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone and 20 Gm. of sodium salicylate in water to make 100 cc.

Ampules Homocamfin 1 per cent (for intravenous use). Each ampule contains 1.2 cc. of a solution made by dissolving 1 Gm. of *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone and 25 Gm. of sodium salicylate in water to make 100 cc.

3-methyl-*5*-isopropyl-△ *2*-cyclohexenone occurs as a light yellowish oil, having a bitter taste. It boils at 127 to 128 C. at 18 mm. pressure. It is soluble in alcohol, ether, benzene and slightly soluble in water. An aqueous solution of 100 cc. containing 10 Gm. *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone, and 25 Gm. sodium salicylate is clear at 25 C. With semicarbizid, *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone yields a precipitate which on drying melts at 178 to 179 C.

Transfer about 0.2 Gm., accurately weighed, of *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone (2 Gm. in case of homocamfin for intramuscular use; or 10 Gm. in case of homocamfin for intravenous use) to a suitable steam distilling apparatus, add 20 cc. of water, followed by about 1 Gm. of magnesium oxide (recently "calcined"), pass steam through the mixture until about 200 cc. of distillate has been collected, transfer the distillate to an Erlenmeyer flask, add 5 cc. of hydrochloric acid and 35 cc. of tenth-normal potassium bromide-potassium bromate solution, stopper the flask with a rubber stopper into which is inserted the small end of a straight drying tube filled with beads moistened with potassium iodide solution, shake the contents of the flask and allow the flask to stand for five minutes; through the drying tube add 20 cc. of potassium iodide solution, shake the solution and titrate quickly the liberated iodine with tenth-normal sodium thiosulphate solution, using starch solution as indicator: each cc. of tenth-normal potassium bromide-potassium bromate solution consumed is equivalent to 0.0076 Gm. of *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone; in case of *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone, the amount found is not less than 95 per cent nor more than 105 per cent; in case of homocamfin ampules the amount of *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone found to be present is not less than 95 per cent nor more than 105 per cent of the claimed amounts.

Transfer the residual mixture after the steam distillation described in the determination for *3*-methyl-*5*-isopropyl-△ *2*-cyclohexenone to a 500 cc. standard flask, add sufficient hydrochloric acid to make the solution acid and shake the contents until the heavy particles dissolve, add sodium hydroxide solution until alkaline and then add diluted hydrochloric acid until the solution is just acid; transfer an aliquot (25 cc. in the case of homocamfin ampules for intravenous use and 100 cc. in the case of homocamfin ampules for intramuscular use) to an Erlenmeyer flask, add an excess of tenth-normal potassium bromide-potassium bromate solution followed by 5 cc. of hydrochloric acid, stopper the flask quickly with a rubber stopper into which is inserted a drying tube filled with beads and moistened with potassium iodide solution; shake the contents well and then allow the flask to stand twenty minutes; through the drying tube add 20 cc. of potassium iodide solution and allow the flask to stand ten minutes, titrate the liberated iodine with tenth-normal sodium thiosulphate using starch solution as indicator: each cc. of tenth-normal potassium bromide-potassium bromate solution is equivalent to 0.002668 Gm. sodium salicylate; the amount of sodium salicylate is not less than 21.1 per cent nor more than 24.3 per cent in the case of homocamfin ampules for intravenous use; nor less than 17.2 per cent nor more than 19.8 per cent in the case of homocamfin ampules for intramuscular use.

TUTOCAIN. — Butamin. — *p*-amino-benzoyldimethylaminomethyl-butanol hydrochloride.—γ-dimethylamino-α β dimethylpropyl-*p*-aminobenzoate hydrochloride. — *p*-aminobenzoyl-dimethylamino 1:2 dimethyl-propanol hydrochloride.—$(CH_3)_2N.CH_2.CH(CH_3)CH(CH_3)(O.CO.C_6H_4.NH_2)HCl$.—The base of tutocain belongs to the procaine type, but in addition possesses two asymmetric carbon atoms; it is optically inactive. Tutocain is therefore a racemic mixture of the hydrochlorides.

Actions and Uses.—Tutocain is a local anesthetic employed chiefly for surface anesthesia and by subcutaneous injection. When correctly used, tutocain rapidly produces complete and prolonged anesthesia and is effective even in relatively low concentration.

It is reported that complete anesthesia of the cornea occurs four minutes after the application of 0.25 to 1 per cent solutions of tutocain; surface anesthesia in the nose, throat and eyes is reported to develop more slowly than with cocaine, but to be equally intense. When tutocain is used by injection, the effects are very prompt.

In wheal tests on human beings, a 1 per cent tutocain solution produced an anesthesia that lasted for from fifteen to twenty minutes; one-eighth per cent solution containing epinephrine gave an anesthesia that lasted for about two hours. In experiments made for the Council, tutocain in 3 per cent solution is about four times as toxic as procaine hydrochloride by rapid intravenous injection into the cat and a fatality has been reported following the injection of 8 cc. of a 2 per cent solution into the urethra. On the other hand, experiments and clinical trials have been reported in support of the claim that tutocain is relatively safe for use in surface anesthesia and by hypodermic injection.

Dosage.—For application to the eye, nose and throat, 2 to 5 per cent solutions of tutocain are used; for applications to the urethra, 0.5 to 1 per cent solutions, increased to 2 per cent in very painful procedures; for infiltration anesthesia, 0.2 per cent solutions are generally used.

Tutocain solutions may be sterilized by boiling for a short time.

Manufactured by The Bayer Company, Inc., Rensselaer, N. Y. (Winthrop Chemical Co., Inc., New York, distributor). U. S. patent 1,474,567 (Nov. 20, 1923; expires 1940). U. S. trademark 180,610.

Tablets Tutocain No. 1 (with Epinephrin): Each tablet contains tutocain, 0.03 Gm.; epinephrine, 0.00015 Gm.

Tablets Tutocain No. 2 (with Epinephrin): Each tablet contains tutocain, 0.03 Gm.; epinephrine, 0.00006 Gm.

Tablets Tutocain No. 3: Each tablet contains tutocain, 0.03 Gm.

Tablets Tutocain No. 4 (with Epinephrin): Each tablet contains tutocain, 0.05 Gm.; epinephrine, 0.000125 Gm.

Tablets Tutocain No. 5: Each tablet contains tutocain 0.1 Gm.

Tutocain occurs as a light, ivory colored crystalline powder; practically odorless; when applied on the tongue, it possesses a faintly bitter taste followed by a sense of numbness; permanent in the air; easily soluble in water (about 1 in 4); difficultly soluble in alcohol (1 in 50). Its aqueous solution (1 in 10) is neutral to litmus paper. It is optically inactive. It melts at 212 to 215 C. From aqueous solutions, alkali hydroxides and carbonates precipitate the free base as a light yellowish oil which solidifies after some time and melts at not less than 81 C.

Dissolve about 0.1 Gm. in 5 cc. of water, add 2 drops of diluted hydrochloric acid and 2 drops of sodium nitrite solution (10 per cent) and mix with a solution of 0.2 Gm. of betanaphthol in 10 cc. of sodium hydroxide solution (10 per cent): a scarlet red precipitate is formed (*distinction from phenacaine*, which gives a white precipitate). Dissolve 1 Gm. in 10 cc. water: to separate portions of 2 cc. each, the solutions yield a white precipitate with 1 cc. of potassium mercuric iodide solution; a brown precipitate with 1 cc. of iodine solution; a brown precipitate with 1 cc. of gold chloride solution (*distinction from apothesine*, which gives a lemon yellow precipitate); a yellow precipitate with 1 cc. of picric acid solution; a white curdy precipitate with 1 cc. of nitric acid and 1 cc. of silver nitrate solution. Dissolve 0.1 Gm. in 5 cc. water add 2 drops diluted hydrochloric acid and 1 cc. barium chloride solution: no precipitate forms (*distinction from butyn*). To a solution of about 0.1 Gm. in 5 cc. of water, add 3 drops of diluted sulphuric acid and mix with 5 drops of potassium permanganate solution: the violet color of the latter disappears immediately (*distinction from cocaine*). Dissolve about 0.1 Gm. in 1 cc. of sulphuric acid: the solution is colorless (*organic impurities*). Dissolve 0.1 Gm. in 10 cc. water and saturate with hydrogen sulphide: no coloration or precipitation occurs (*salts of heavy metals*).

Dry about 1 Gm. accurately weighed to constant weight at 100 C.: the loss does not exceed 1 per cent. Incinerate about 0.5 Gm. accurately weighed: there is not more than 0.2 per cent residue.

Dissolve about 1 Gm. previously dried to constant weight at 100 C., weigh accurately and add a few pieces of ice, 15 cc. of hydrochloric acid and titrate with tenth-normal sodium nitrite solution using starch iodide paper as an indicator: the amount of tenth-normal sodium nitrite consumed corresponds to not less than 99 per cent nor more than 101 per cent.

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SATURDAY, DECEMBER 18, 1926

SOME ANNIVERSARIES OF 1926

From a nationalistic standpoint, the year 1926 has afforded opportunity for notable anniversary celebrations. In this country the sesquicentennial of the declaration of the independence of the United States has assumed the greatest prominence. The history of medicine also affords occasion for retrospect and commemoration. In 1776, the year brought so conspicuously into the public mind at the present time, the Prussian army surgeon Jasser successfully operated on the mastoid; Cruikshank of Edinburgh investigated the reunion and regeneration of severed nerves, and showed that they will grow together again, and Scheele isolated uric acid from the urine.

The present year marks the centennial anniversary of the publication of what Garrison has described as a psychiatric milestone, Calmeil's book on general paralysis of the insane. In the same year Laënnec gave his classic description of bronchitis and other thoracic diseases, while Dupuytren published his original description of congenital dislocation of the hip-joint. In 1876, half a century ago, Edoardo Porro first performed cesarean section with excision of the uterus and adnexa, and the Paquelin cautery was introduced. The American surgeon Louis Albert Sayre, who had performed the second excision of the hip-joint in America in 1855, during our centennial year introduced the method of suspension in a plaster-of-paris jacket for Pott's disease and spinal deformities.

Fifty years ago represents a period near the beginning of modern cytology and cellular embryology, with its epoch-making researches on fertilization and cell division. In 1876, Koch announced that he had worked out the complete life cycle and sporulation of the anthrax bacillus. He demonstrated that it could be grown in pure culture outside the body and then produce the characteristic disease in animals. Carl Weigert, who in 1871 was the first to stain bacteria, inaugurated the use of aniline dyes in 1876 for microscopic investigations. Two generations that have employed such technic as a part of their daily professional routine will rejoice in celebrating the semicentennial of this great success.

The present year includes also the fiftieth anniversary of the American Chemical Society. American medicine will find many familiar names in the record of fifty years' progress in the chemistry of physiology and nutrition in the United States, prepared by Graham Lusk[1] for the golden jubilee number of the society. To cite them might lead only to invidious comparisons. The author remarks, after giving his summary of the American contributions to physiologic chemistry, that the part played by Germany in educating American scientists stands out strongly. Is our own intellectual sustenance, Lusk asks, really an adequate diet containing the proper building stones and the fertility vitamin E? Are we now on the crest of productivity or are we just beginning? As to this, the next half century of the American Chemical Society will bear witness. Perhaps some reference of the same sort might be applied to American medicine.

PHOSPHORUS IN RICKETS

Traditional methods of treatment should never be brushed aside lightly, even when they are based wholly on empiricism. It may be wise usually to heed the dictates of experience in fields wherein scientific procedure has not yet penetrated or its contributions are not clear cut. Crude empiricism, history indicates, has given us not a little of the medical art down to the past century; nor has it yet disappeared. But the mere fact that a therapeutic suggestion has found some vogue should not absolve it from rigorous examination that will test its rationality.

A justification of these comments may be found in a recent study of the reputed value of elementary phosphorus in rickets.[2] Not long ago the phosphorus treatment attained recognition and even recommendation in this country.[3] Half a century has elapsed since it was first brought to the attention of clinicians. The reports about its efficacy are surprisingly contradictory. The memorable "phosphorus debate," which was held on four successive meetings of the Vienna Medical Society in 1885, concluded that phosphorus seemed to be a specific for rickets in Vienna but of no value in Berlin. The modern studies of rickets have indicated, however, that seasonal variations occur in the incidence and severity of the disease. Cures reported for the summer months when adequate exposure to sunshine is likely to have existed have a new significance in the light of present knowledge of the influence of solar radiation on bone development. Furthermore, the vehicle in which phosphorus was frequently administered was cod liver oil, now well known to be antirachitic.

1. Lusk, Graham: Fifty Years of Progress in the Chemistry of Physiology and Nutrition in the United States, 1876-1926, J. Am. Chem. Soc. **48**: 153 (Aug. 20) 1926.
2. Hess, A. F., and Weinstock, Mildred: The Value of Elementary Phosphorus in Rickets, Am. J. Dis. Child. **32**: 483 (Oct.) 1926.
3. Jacobi, Abraham: Therapeutics of Infancy and Childhood, Philadelphia, J. B. Lippincott Company, 1903, p. 131.

The experiments of Hess and Weinstock at Columbia University College of Physicians and Surgeons have taken into account these sources of error in drawing conclusions as to any specific rickets-healing potency of elementary phosphorus. They have demonstrated that the element cannot prevent the development of rickets in rats, the animal well adapted for the study of the disorder. They find no reason for believing that its action is essentially different in regard to the rickets of infants. In Hess and Weinstock's tests, even when the diet was but slightly rachitogenic, the addition of phosphorus with an inadequate amount of cod liver oil failed to render the oil adequate. These failures in protective action were noted on diets low in phosphorus as well as on a diet low in calcium. A marked increase in calcification of the long bones (subepiphyseal band) took place concurrently with the development of typical rachitic lesions. The New York investigators contend that the failure of elementary phosphorus to bring about protection against rickets emphasizes once more the essential nature of this disorder—the fact that its lesions do not come about merely from a lack of deposition of inorganic salts in the epiphyses. It is true, they add, that elementary phosphorus is able to stimulate calcification at the epiphyses; but as it is unable to calcify the preparatory cartilage or osteoid tissue, it is impotent in preventing the advance of the essential pathologic process. Nor have they been able to convince themselves that it is of definite value in craniotabes. In "nonrachitic softening of the ribs," it was given a thorough trial without success. When we bear in mind its narrow and circumscribed field of ossification, they state, these failures are not a matter for wonder.

PROBLEMS OF POPULATION

Students of human welfare have lately become more and more aware of seemingly conflicting trends in the progress of mankind. Movements that lead to betterment in one direction may presently encounter obstacles that are interposed from another source. The current literature dealing with the problems of human society has begun to reflect the incongruities and incompatibilities that are likely to arise in the development of modern programs. The benefits that are accruing through the application of the principles of preventive medicine are bringing about situations that may sooner or later result in unintended distress. Ravenel,[1] in a recent summary of certain features of the outlook, writes that never before has there been such an intensive campaign to prolong life. Our success in the control of communicable diseases has been notable along every line except for the respiratory infections. Education in personal hygiene is making good advances. New discoveries in problems of nutrition and the value of foods have been revolutionary. Physical education has been so magnified that it threatens to overshadow mental training in our schools and universities. Along with these advances, there has been an equal improvement in our environment. Such conditions mean increase in population.

Speculation as to the available food supply of the world in relation to those who are to be fed has become a popular pastime. In a presidential address before the British Association for the Advancement of Science, in 1898, Sir William Crookes ventured to predict that within a generation there would be not more than enough wheat raised to supply the increase in population among bread eaters.[2] This prediction has evidently not proved to be correct. The threatened day is at hand, but the crisis still seems far away. Nevertheless, considerations of the problem of the capacity of the world to continue to feed its growing population continue to be presented. Not long ago Sir Daniel Hall[3] warned the British Association anew regarding the impending conflict between the cultivated area and population. He has insisted that as there is admittedly a limit to the extent of land available, the question arises: To what degree can the tuning-up of methods be made to compensate for a nonexpanding acreage? Unanticipated improvements in agriculture have discounted the dire consequences of earlier prognostications. Hall points out that as it cannot be supposed that the development of the civilized races can be allowed permanently to be checked by lack of food when food is obtainable, it follows that resort must be had to the intensification of production from the area already under cultivation. The means for that intensification are already in sight; more will be supplied with the advancement of research. Intensification, however, is in the main attended by a higher cost of production. Economic stress may lead to new methods of organization and distribution, but in any event there will be stress. How close at hand the period of pressure may be, Hall does not venture to prophesy; but he insists that pressure is sooner or later inevitable and that one of the biggest problems before the world at present is to prevent the pressure developing suddenly or becoming unbearable. The intensification of production is the only remedy, and again the only means of rendering intensification practicable is the continued pursuit of scientific research.

What do the students of population have to offer in relation to the growth of numbers? Better living conditions have produced more persons, but the current estimates of their projected quality are scarcely more inspiring than the outlook for an unlimited food supply. According to the pessimistic estimates of East we have "people with no sense worthy the name, defective stock, over five million; people with little sense, scrub stock, twenty million" in this country

1. Ravenel, M. P.: The Trend of Public Health Work: Is It Eugenic or Dysgenic? Scientific Monthly **23**: 331 (Oct.) 1926.

2. Mendel, L. B.: Changes in the Food Supply and Their Relation to Nutrition, Yale University Press, 1916.

3. Hall, Daniel: The Relation Between Cultivated Area and Population, Scientific Monthly **23**: 356 (Oct.) 1926.

alone. Their fecundity is admittedly great. Birth control plays little part among the unfit. Eugenics, with its commendable program to increase the birth rate of the fit and decrease that of the unfit, will find its progress impeded by the operation of euthenic agencies. Is the trend of public health work "dysgenic" rather than "eugenic"? Without attempting an answer, Ravenel, who has recently propounded this question, ventures the belief that from the biologic standpoint there seems no possibility of producing a superman. He concludes, rather, that our present measures will continue to save more and more lives. The good and the bad alike will be saved. Our present standards will not permit of any lessening of our attempts to save lives and to better conditions, nor do any people exist who would propose a lowering of standards. Will the next few hundred years result in overcrowding to a point requiring a change in the general attitude toward these matters? Who knows?

THE CHALLENGE TO NEUROLOGY

The selection of a program of healthful living is occupying the attention of many thoughtful persons. Interest in public health is no longer centered exclusively in the problems of the group. Consideration is being devoted in rapidly increasing measure to the welfare of the individual, and the needs of personal hygiene are being stressed as never before. Strong muscles call for a good circulation; endurance demands satisfactory nutrition; physical efficiency is a postulate of bodily alertness. In any event, successful development in these features is a matter of individual health and effort.

It is not customary to associate brain and brawn to any considerable extent. Considerations of "fitness" are directed, in the popular mind at least, to the musculature, to the circulation and to alimentation. These are properly conceived to be subject to modification and readjustment. Their functions can be corrected or improved in many instances. They are of immediate concern. The nervous system and its varied manifestations, on the other hand, are commonly regarded as more or less fixed products of heredity that may call for eugenic improvement. The latter seems to be so far away in its possibilities that it rarely awakens much enthusiasm except among idealists.

In his presidential address before the American Neurological Association at Atlantic City, last June, Tilney[1] made a vigorous plea for the better training of our brain power. The means for further development, he remarked, are in one's own hands if one chooses to use them. Many, if not all, present problems may best be solved in this way. The process of this development depends on better conditioning of the brain, on greatly improved educational methods and on more adequate instruction. As the master organ of the nervous system is the basis of all further progress, neurologists should be the first to see the opportunity, to accept the responsibility and to lead the way.

Here is a challenge of compelling interest. If the possibility of more progress along the lines of greater brain development and still better adjustments to life is accepted, a new inspiration and a new and weighty responsibility face the medical profession. Tilney insists that a decisive change in the almost casual attitude toward the chief organ of the nervous system is called for. The brain has been sufficiently identified with processes of disease and disintegration. It now must be realized as the only instrument for further success and progress.

There may be physicians who will rebel at any further imposition of obligations on a profession already heavily burdened with the needs of human betterment. They may prefer to keep to the "healing art" as it was earlier conceived. To these will come the reminder that specialization has already begun to permit of a division of labor. Few devotees of medicine are today expected to be all things to all persons. They need, however, to have an appreciative interest and a sympathetic as well as a critical outlook on the newer ventures. If those who are delegated to labor in neurologic fields are to serve not merely persons who fall victims to disease but also individuals with possible potencies of greater brain power, the new domain may need better definition. Mills[2] has charged the modern neurologist with the duty of seeing that elementary education be so planned and pursued that instruction shall travel hand in hand with what should be the natural order of the evolution of the brain.

What, then, is neurology, the discipline that has usually received the ill fitting definition of "the science of the nervous system"? According to Tilney, it is the study of all phases of that dominating system of the body which controls the entire process of behavioral adjustment and human evolution; that system which has carried man forward from one stage of his progress to the next, which has made him what he is, which holds out to him his only chance of improvement. After all, it may be questioned whether real improvement is not a vain hope. Sir Arthur Keith declared that man had not utilized more than half his actual brain power. To Tilney this estimation appears almost too generous. It seems more likely that scarcely more than a fifth of the brain power has been developed. He points out, for example, how the truth of the dictum that only a fraction of the human brain has been employed for the ultimate purposes of man becomes still more clear in considering individual development. All members of the human family today are predominantly either right-handed or left-handed. Clinicopathologic researches have shown that speech

1. Tilney, Frederick: Neurology and Education, Arch. Neurol. & Psychiat. 16: 539 (Nov.) 1926.

2. Mills, C. K.: Neurology and Elementary Education, Arch. Neurol. & Psychiat. 16: 549 (Nov.) 1926.

centers develop in the left hemisphere of right-handed people, and vice versa for left-handed people. Thus, by education and training, one hemisphere of the brain is more developed than the other. Experience in the education of the deaf, the mute and the blind also testifies to the possibility of development in the use of the senses. There may be failures as well as successes; hence the need of expert guidance, so that training shall not "build up a system of artificialities based on delusional substitutes." The problem of making the best of life includes the health and function of the brain—a constructive neurologic opportunity.

Current Comment

THANKS TO OUR SUBSCRIBERS

The request in THE JOURNAL, last week, for payment of 1927 Fellowship and subscription dues was met by a pleasing response. Thousands of the colored slips inserted in THE JOURNAL are already on their way accompanied by checks, money orders or drafts covering the 1927 dues. For this cooperation, the subscription and fellowship departments express their sincere thanks. After all, it requires but a few minutes' time for each person whose dues for 1927 are not paid to mail the slip with remittance. However, if individual bills must be sent, a tremendous amount of clerical work is necessary. The postage cost alone of sending bills to the entire mailing list of THE JOURNAL would approach $2,000. Those who have overlooked the slip may refer back to last week's issue of THE JOURNAL and remit now.

THE PRESIDENT AND THE SHEPPARD-TOWNER ACT

The opinion of the President of the United States with respect to the Sheppard-Towner Act may be inferred from an address made by him at a meeting of "The Business Organization of the Government," Jan. 21, 1924, in the course of which he said:

> I take this occasion to state that I have given much thought to the question of federal subsidies to state governments. The federal appropriations for such subsidies cover a wide field. They afford ample precedent for unlimited expansion. I say to you, however, that the financial program of the chief executive does not contemplate expansion of these subsidies. My policy in this matter is not predicated alone on the drain which these subsidies make on the national treasury. This of itself is sufficient to cause concern. But I am fearful that this broadening of the field of government activities is detrimental both to the federal and to the state governments. Efficiency of federal operations is impaired as their scope is unduly enlarged. Efficiency of state governments is impaired as they relinquish and turn over to the federal government responsibilities which are rightfully theirs.

The President has reiterated and reaffirmed that opinion in his recent message to Congress transmitting the budget for 1928, in which he said:

> No estimate is submitted for carrying on the work under the maternity and infancy act, approved Nov. 23, 1921, inasmuch as the authorization of appropriations for this purpose was fulfilled with the appropriation for 1927. A bill is now pending before the Congress extending the provisions of that act to the fiscal years 1928 and 1929. If and when that measure becomes law, I propose sending to the Congress a supplemental estimate for an appropriation to make its provisions effective. I am in favor of the proposed legislation extending the period of operation of this law with the understanding and hope that the administration of the funds to be provided would be with a view to the gradual withdrawal of the federal government from this field, leaving to the states, who have been paid by federal funds and schooled under federal supervision, the privilege and duty of maintaining this important work without aid or interference from the federal government.
>
> I have referred in previous budget messages to the advisability of restricting and curtailing federal subsidies to the states. The maternity act offers concrete opportunity to begin this program. The states should now be in a position to walk alone along this highway of helpful endeavor, and I believe it in the interest of the states and the federal government to give them the opportunity.

If the Sheppard-Towner Act is a menace to public welfare, why should it be allowed to continue in force for two years, or even for one? "If eventually, why not now?"

"NARCOSAN" AND DRUG ADDICTION

Newspapers throughout the country holding membership in the North American Newspaper Alliance carried a story, December 15, concerning the discovery by "Dr." A. S. Horovitz of a new remedy for drug addiction known as "narcosan." Since his arrival on these shores in 1913, Horovitz has been continuously identified with attempts to promulgate cures for all sorts of disorders by mixtures of lipoids and vegetable substances of the nature of nonspecific proteins. Included in his records are the Horovitz-Beebe "cure" for cancer, the Merrell proteogens for the cure of practically everything, and more recently "narcosan," originally brought out about 1920 under the name of "lipoidal substances." Horovitz' present effort to promote "narcosan" as a cure for narcotic addiction is supported by a clinical investigation by Drs. Alexander Lambert, ex-president of the American Medical Association, and Frederick Tilney, one of the editors of the *Archives of Neurology and Psychiatry*. The paper by these investigators appears in the *New York Medical Journal and Record* for the week of December 17. This paper was rejected by THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION because the Council on Pharmacy and Chemistry rejected the product known as "lipoidal substances" in 1921, because up to the present time the product has not been resubmitted and is apparently still of unestablished composition, and because the clinical investigations are not set forth in such a manner as to indicate even ordinary controls, such as might have been secured by treating an equal number of patients with the nonspecific proteins alone. Furthermore, on their admittance into the hospital, the patients were given a cathartic mixture consisting of seven ingredients, including some of those in the compound vegetable cathartic pill and a few others. Nevertheless, the paper was promptly accepted by the *New York Medical Journal and Record*, and simultaneously with its appearance in that periodical, a complete statement, highly exaggerated, was issued by the North American Newspaper Alliance. This statement appeared in three

parts: the first, an account of the Lambert clinical investigations; the second, life stories of some of the patients, and the third, a highly sensational account of the life of A. S. Horovitz, omitting, however, all the points in his record to which reference has been made earlier in this comment. As soon as it was learned in the headquarters office that the newspaper publicity mentioned had been released by the North American Newspaper Alliance, a statement was given to the Associated Press defining the position of the American Medical Association headquarters office in this matter. Perhaps time will reveal sufficient basis in the Horovitz discovery to warrant its acceptance; possibly the clinical investigations made by Drs. Lambert and Tilney have been strictly accurate and scientific; maybe something actually worth while will come from this attempt to control drug addiction. Nevertheless, there is a method which has been repeatedly defined by the American Medical Association as the safe and scientific method of introducing a new proprietary. The American Medical Association has established a council which will act promptly in passing on the claims made for such products and on their worthiness.

Association News

ASSOCIATION PROTESTS RENEWAL OF SHEPPARD-TOWNER BILL

Propagandists of the Sheppard-Towner plan for federal supervision and control of state health activities have succeeded in having the bill now pending in the Senate to continue that plan put on the calendar as unfinished business. This will permit it to be called up for action more promptly than would otherwise be possible. On behalf of the American Medical Association, the following telegram has been sent to the President, the Vice President, and certain interested senators:

> The American Medical Association with a membership of more than ninety thousand physicians protests against any extension of the Sheppard-Towner Act. To get the federal bonus, a state must appropriate money. To appropriate money, state taxes must be increased or funds withdrawn from other state activities. The act therefore invites limitation of state sanitary activities in fields except that named in act. No evidence has yet been produced to show that act has prevented sickness or death, or that it has increased total appropriations for sanitary purposes over what would have been normally appropriated.

Promotion of Preventive Medicine.—I suggest that under adequate medical statesmanship the rank and file of private practitioners of medicine must excel industries, insurance companies, and governments in their zeal for the promotion of preventive medicine. That is to say, under adequate medical statesmanship, the men in the private practice of medicine will deliberately set out to educate their clientele to look to physicians primarily for the care of health rather than for the cure of disease. Unfortunately, the American people still look on doctors mainly as experts to be called in emergencies. On account of this short-sightedness of the American people, doctors actually have a vested interest in ill health instead of a vested interest in good health. The prevailing attitude of the people toward doctors actually puts a premium on disease rather than on health. In the main, doctors still secure their income from curing sick folk, not from advising well folk how to keep well. The tendency toward retaining doctors as health advisers is growing, but it is still a tiny tendency that affects the total health problem only slightly.—Frank, Glenn: A Challenge to Medical Statesmanship, *Wisconsin Medical Journal* **25**:534 (November) 1926.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Hygeia for Alaskan Legislators.—The Alaska Territorial Medical Association has ordered from the American Medical Association headquarters subscriptions to *Hygeia* for each of the eighteen new members of the Alaskan legislature.

Hospital Boat on the Yukon.—A radio communication received by the U. S. Department of the Interior states that the hospital boat on the Yukon River of the bureau of education cruised 2,200 miles during the summer, and that the physician and two nurses on board cared for 500 natives and examined hundreds of others. It was recommended that a hospital be opened for the treatment of about eighty cases of what was considered tuberculosis. Only two days were lost during the summer on account of inclement weather (THE JOURNAL, July 31).

DISTRICT OF COLUMBIA

Society News.—Dr. Charles S. White has been elected president of the Medical Society of the District of Columbia for 1927, and Dr. Coursen B. Conklin, 1718 M Street N.W., secretary.——Dr. William A. White, superintendent, St. Elizabeth's Hospital, addressed the Child Study Association at the conference in Baltimore, November 30, on "The Increased Tendency of Mental Hygiene to Focus About the Child."

FLORIDA

Society News.—The fourteenth annual program of the Pinellas County Medical Society announces the speakers at all meetings from Oct. 15, 1926, to May 20, 1927; the December 20 session will be "President's Night"; the president for the ensuing year is Dr. Leroy A. Wylie.

"Mr. Fox" Calls at Miami.—The notorious individual who made the general news columns of THE JOURNAL three weeks ago under the non de plume "Dr. Philip Fox of Wisconsin" has since then turned up at Miami under the name of "Dr. George Fox of Milwaukee." As usual, he claimed to be a graduate of Rush Medical College (1897). He spent the evening at our correspondent's home, and was given a "gorgeous spread." He knew all about Rush, and had just arrived from Havana to go on a fishing trip with some well known physicians and others who were supposed to be then at Palm Beach. But it was Saturday night and the banks were closed and he needed cash over Sunday. His host gladly cashed a check for $15. The check which was returned from the bank with a "No Account" notice was signed "George A. Fox." Since the foregoing item was set in type, a physician at Ocala has written that Fox visited him, but did not attempt to get money, although "he was heading up to that as he told the same story about his car breaking down."

ILLINOIS

Liquor Licenses Revoked.—The district prohibition administrator with headquarters in Chicago has revoked the liquor licenses of the following, for the reasons indicated:

Dr. Martin L. Gettinger, Palestine; failed to keep proper records; unlawfully issued prescriptions.
Dr. Martin B. Jelliffe, Springfield; failed to keep proper records; issued prescriptions to fictitious names and addresses.
Dr. Enos S. Spindel, Springfield; failed to keep proper records; issued prescriptions to fictitious names and addresses.
Dr. S. A. Ware, Springfield; failed to keep proper records; issued prescriptions unlawfully.

Personal.—Dr. Howard A. Orvis, Grass Lake, Mich., has been appointed full-time health officer of Winnetka, effective, Jan. 2, 1927.——Dr. Aaron H. Smith of the Niagara County Sanatorium, Lockport, N. Y., has been appointed superintendent of the Livingston County Tuberculosis Sanatorium to succeed Dr. F. Herbert Bartlett, resigned; Dr. Smith formerly practiced at Ransom.——Dr. Edward P. Troy, Chicago, has been appointed superintendent of dispensary service for the Chicago Municipal Tuberculosis Sanitarium. For the last five years, Dr. Troy has been in charge of the Robey Street dispensary, and in his new position will succeed Dr. Clarence L. Wheaton, who recently resigned.

Chicago

Hospital News.—The staff of the Norwegian Deaconess Hospital gave a testimonial dinner recently in honor of Dr. Elmer E. Henderson.——The Chicago *Tribune* reported a "walk-out" of nurses at the West Suburban Hospital, November 20, when a new pay schedule was announced.

Medical Reserve Corps Changes.—The following changes, among others, in the medical reserve of the sixth corps area are noted in the December *Military Surgeon:*

Lieut. Col. Albert E. McEvers, Med. Res., Rock Island, relieved from assignment to station hospital, Fort Sheridan, and assigned to Three Hundred and Sixty-Fifth Medical Squadron.
Lieut.-Col. Frederick R. Green, Chicago, transferred in grade from medical reserve to auxiliary reserve.
Major Floyd W. Clements, Med. Res., Detroit, relieved from assignment to station hospital Fort Wayne, Mich., and assigned to Mobilization Concentration Camp, Fort Wayne.
Majors William B. Fisk, Med. Res., Oak Park, and Edward L. Jenkinson, Med. Res., Chicago, and Capt. George H. Coleman, Med. Res., Chicago, have been assigned to One Hundred and Fourteenth General Hospital.
Capt. Claude M. Stafford, Med. Res., Detroit, and Lieuts. Harold C. Mack and John B. Dibble, Med. Res., both of Detroit, are recent appointments in the reserve corps.

Society News.—The Chicago Ophthalmological Society will meet at the Hotel Sherman, December 30, with a fellowship dinner at 6:30, presentation of clinical cases at 7, and a scientific program at 8 o'clock; members desiring to present clinical cases should communicate with the chairman of the clinical committee, Dr. George F. Suker; among others, Dr. Cassius D. Wescott will speak on "Accommodation as It Concerns Us in Routine Refraction Work"; Dr. Robert Vonder Heydt will exhibit lantern slides of illustrations and an original copy of "Augendienst," one of the first complete works on the eye.——Esmond R. Long, Ph.D., addressed the Chicago Neurological Society, December 16, on "Adenoma of the Hypophysis Without Acromegaly or Visual Disturbances, Terminating in Sudden Death."——The Chicago Society of Internal Medicine will meet jointly with the Illinois Division of the Society of Experimental Biology and Medicine, City Club, December 20.——The surgical department gave the program at the regular monthly clinical meeting, December 16, at the Cook County Hospital.——Dr. Ernst Pribram gave a demonstration before the Chicago Pathological Society, December 13, at the John Crerar Library, of "Anteromedian Mero-Acrania (Nosencephalos) with Hypogastroschisis Dextra and Malformation of the Fingers and Toes."

Liquor Licenses Revoked.—The local prohibition administrator, Mr. E. C. Yellowley, has revoked the liquor licenses of the following for the reasons indicated:

Dr. Ione F. Beem, failed to keep proper records; issued prescriptions in an unlawful manner; conspired to divert nonbeverage liquor to beverage purposes.
Dr. Walter E. Bourque, failed to keep proper records; issued prescriptions to fictitious names and addresses.
Dr. William F. Dean, failed to keep proper records; issued prescriptions unlawfully.
Dr. Bertha I. Kahn, failed to keep proper records; issued prescriptions in an unlawful manner.
Dr. Francis B. Krol, failed to keep proper records; issued prescriptions unlawfully.
Dr. Victor Pacyna, failed to keep proper records; issued prescriptions unlawfully.
Dr. Henry Rosenblith, failed to keep proper records; issued prescriptions unlawfully.
Dr. Max Rosenstiel, failed to keep proper records; issued prescriptions in an unlawful manner.
Dr. Oswald G. Stark, failed to keep proper records; issued prescriptions unlawfully.
Dr. Ansel H. Tulupan, failed to keep proper records; issued prescriptions to fictitious names and addresses.
Dr. Clarence L. Walton, failed to keep proper records; issued prescriptions unlawfully.
Dr. Henry O. Wernicke, failed to keep proper records; issued prescriptions in an unlawful manner.
Dr. Oscar G. Wernicke, failed to keep proper records; issued prescriptions in an unlawful manner.

KENTUCKY

Personal.—Dr. Clarence F. Holtegel, Louisville, has taken up the duties of health officer of Johnson County.——Dr. Philip E. Haynes has been appointed city health officer of Hopkinsville to succeed the late Dr. James B. Jackson.——Dr. and Mrs. John W. Botts, Owenton, entertained the Owen County Medical Society following the regular meeting, November 19, at a quail dinner at their home.

Fined for Narcotic Violations.—Dr. Clarence Woodburn, Owensboro, and Dr. Robert T. Bailey, Central City, pleaded guilty in federal court to violating the Harrison Narcotic Act, November 23, it is reported; they were fined $500 and $300, respectively, and were sentenced to four months in jail. The jail sentences were probated, the accused being ordered to report monthly for a year to a government agent at Louisville.

LOUISIANA

Personal.—Drs. Arthur G. Heath, Morton F. Smith and John A. Hendrick have been appointed to the board of health of Shreveport for four years; Dr. Heath has been elected president of the board.

Hospital News.—The board of directors of Charity Hospital have decided to construct an intern's home to cost $175,000 on Tulane Avenue opposite the hospital and bids for its construction will be taken at once.——The Leon M. Soniat Memorial Hospital, New Orleans, laid the cornerstone of a new wing, November 7, which, when completed, will cost about $200,000. The hospital, founded a few years ago, was given an endowment fund of $160,000 to provide free treatment for the poor in addition to the grounds and building at that time by Mrs. Soniat in memory of her husband.

Fife Brothers, Chiropractors, Lose Appeal.—The state supreme court handed down a decision, November 29, it is reported, in the case of Joseph B. and Walter W. Fife, chiropractors of New Orleans, who had appealed on the ground that the act under which they were convicted and sentenced to sixty days in prison was unconstitutional. The court held that the act was constitutional and ordered the defendants to begin serving their sentence as soon as papers were served on them. The Fifes have been in court several times in connection with charges of practicing without a license (THE JOURNAL, Nov. 11, 1922; July 7, 1923; May 10, 1924; Nov. 1, 1924; June 19, 1926).

District Medical Society Meetings.—During the week from December 6 to 12, district medical societies held meetings throughout the state which were attended by Dr. S. M. Blackshear, president of the state medical society; Dr. Hermann B. Gessner, chairman of the editorial committee of the *New Orleans Medical and Surgical Journal*, and Dr. Morris Fishbein. Audiences of physicians and of the public were addressed in Shreveport, Monroe, Alexandria, Opelousas, Lafayette, Carville and New Orleans. The meetings were well attended, and special programs in addition to the addresses of the visitors were held in Monroe and in the national leprosarium at Carville.

MASSACHUSETTS

Health at Somerville.—Telegraphic reports to the U. S. Department of Commerce for the week ending November 27, for sixty-six cities with a total population of about 29 million, indicate that the lowest mortality rate (7.8) was for Somerville, and that the mortality rate for the group of cities was 12.1. The mortality rate for Somerville for the corresponding week last year was 10.5, and for the group of cities, 12.0.

Personal.—Dr. Francis W. Peabody, professor of medicine, Harvard University Medical School, and director, Thorndike Memorial Laboratory of the Boston City Hospital, has been elected a member of the board of scientific directors of the Rockefeller Institute for Medical Research.——Mr. James A. Tobey, New York, lectured on public health law at Harvard University School of Public Health, December 7-9, and will lecture on that subject at the Massachusetts Institute of Technology, about the middle of January.

Appointments at Harvard.—The following new appointments of physicians at Harvard University Medical School, Boston, for one year from September 1 have been announced:

George C. Prather, assistant in anatomy.
William M. Shedden, assistant in anatomy.
Ralph M. Crumrine, assistant in pathology.
James S. Rooney, assistant in pathology.
Gordon D. Atkinson, assistant in genito-urinary surgery.
Edwin P. Hayden, assistant in surgery.
Amzi B. Shoemaker, assistant in genito-urinary surgery.
Arthur J. McLean, Arthur Tracy Cabot fellow in charge of laboratory of surgical research.
Francis F. Heyroth, research fellow in physical chemistry.
Antonio Barbeau, research fellow in physiology.
Herbert S. Wells, research fellow in physiology.

NEW JERSEY

New County Society Presidents.—The following physicians have recently been elected president of the county society indicated:

Dr. Alfred Cramer, Jr., Camden, Camden County Medical Society.
Dr. Herbert H. Wilson, Bridgeton, Cumberland County Medical Society.
Dr. Sanford J. Ferris, Newark, Essex County Medical Society.
Dr. David W. Green, Salem, Salem County Medical Society.
Dr. George L. Orton, Rahway, Union County Medical Society.
Dr Russell B. Stone, Phillipsburg, Warren County Medical Society.
Dr. Charles B. Kaighn, Atlantic City, Atlantic County Medical Society.

Report of Medical Director of State Prison.—The legislature has appropriated funds to enlarge the hospital facilities at the New Jersey State Prison, and to modernize the hospital equipment. The medical director, Dr. Martin W. Reddan, in his report for the last fiscal year, considers that the present facilities are deplorably inadequate. It often occurs, he says, that, because of lack of room, a patient must vacate his bed to accommodate a patient who requires immediate attention. The proposed additions to the hospital will also provide for better isolation of contagious disease and the installation of physiotherapeutic apparatus. During the year, there were only five deaths besides electrocutions among prisoners; twenty-four male patients and one female were transferred to the New Jersey State Hospital.

NEW YORK

Hospital News.—The supervisors of Westchester County have authorized the erection of a seventy-two bed psychopathic hospital, which will be a department of Grasslands Hospital. It is estimated to cost about $300,000.

Health at Albany.—Telegraphic report to the U. S. Department of Commerce from sixty-five cities with a total population of about 29 million for the week ending December 4 indicate that the highest mortality rate (21.0) was for Albany, and that the rate for the group of cities as a whole was 12.6. The mortality rate for Albany for the corresponding week last year was 15.5, and for the group of cities 13.

New York City

Appointment of Interns Deferred Until April.—An official report states that the appointment of interns at the Presbyterian Hospital will hereafter be deferred until some time in April each year. Similar action by all hospitals would prevent the distraction of the minds of senior students from their studies caused when appointments are made at irregular times during the senior year.

Personal.—Dr. Harold M. Hays has been appointed an honorary member of the Australasian Medical Congress, which convenes at Dunedin, New Zealand, Feb. 3, 1927.——Dr. Rudolph E. Pick has been appointed assistant visiting physician to the Metropolitan Hospital——Dr. Maxwell H. Kaiden has been appointed instructor of otology at the New York Polyclinic Medical School and Hospital.

Tribute to Augustus S. Downing.—The dinner in honor of Augustus S. Downing at the Hotel Commodore, December 9, was a tribute to a life of service in the field of professional education. The special guest of honor was the governor, Alfred E. Smith; the toastmaster, Dr. Livington Farrand, president of Cornell University; the committees comprised names prominent in various professions; the speakers were Chancellor Elmer E. Brown, "A Tribute," and Dr. Wendell C. Phillips, President of the American Medical Association, "Application of the Knowledge of Medicine." Dr. Downing's subject was "Educational Requirements and Needs of the People." Dr. Downing has engaged in educational work in New York since 1890; from 1908 to 1926 he was assistant commissioner and director of professional education, and now is deputy commissioner of education. His influence is in part shown in the series of legislative acts which have been passed to elevate the standards of professional practice.

The Brooklyn Health Council.—To provide a central clearing house for definite information concerning organizations doing health work in Brooklyn, and to serve in an advisory capacity all concerns having health problems, the Brooklyn Health Council was formed. It will function by promoting coordination, bringing existing health agencies together in conference, and preventing overlapping of effort. Representatives of the departments of public welfare and health, the chamber of commerce, the county medical society, the Brooklyn Hospital Council and three members at large met before the council was formed to consider whether Brooklyn needed a health council, and from these members a committee was chosen to survey health facilities. The committee found, among other things, that there are seventy-two dispensaries in Brooklyn, which served more than 190,000 persons last year; thirty-eight hospitals, seven of which were maintained by the city, thirty by public subscription and one by the state and, in addition, eighteen proprietary sanatoriums. There are seventeen dental clinics, six in the public schools.

Society News.—The Harmon Foundation has made a gift of $50,000 toward a fund for the pensioning of registered nurses, it is reported. The plan to provide the fund is based, however, on regular payments by nurses, so that at 60 years of age they may retire on a pension of about $1,100 a year.——Nicholas Murray Butler, president of Columbia University, gave the annual discourse before the stated meeting of the Academy of Medicine, December 16, on "The Physician: The Larger View."——Dr. George W. Crile, Cleveland, addressed the Medical Society of the County of Kings, recently, on "The Surgical Thyroid."——Dr. George M. Fisher, president of the state medical society, addressed the Eastern Medical Society, at the new building of the New York Academy of Medicine, December 17, on "The Future Trend of Medical Practice," and Dr. John B. Deaver, Philadelphia, on "Clinical vs. Surgical Diagnosis."—"Irregularities of the Heart" will be the subject of discussion before the Medical Association of the Greater City of New York at the New York Academy of Medicine, 2 East One Hundred and Third Street, December 20; Dr. Russell Burton-Opitz will give an address; the discussion will be by Drs. Alexander Lambert, Lewis A. Conner, Bernard S. Oppenheimer, William W. Herrick, William St. Lawrence and Alois M. Renner. There will also be demonstrations with patients and instruments.

NORTH CAROLINA

Personal.—Dr. William R. Kirk was elected chief of staff of the Patten Memorial Hospital, Hendersonville, at the annual meeting of the trustees, November 15.——Dr. Curtis Norfleet has been elected county health officer of Edgecombe County to succeed Dr. Thomas E. Tucker, resigned.

Hospital Bond Election Rescinded.—The county commissioners of Lee County rescinded the call for an election, November 3, on the question of a hundred thousand dollar bond for the erection of a county hospital, the reason being the short time to inform the people of the merits of the proposition and the low price of cotton. The commissioners announced, however, their belief in the need of a hospital, and that they propose to call an election at a later date disassociated with any political party elections.

Society News.—Dr. John Q. Myers, Charlotte, president of the state medical society, was guest of honor at the banquet of the Sixth District Medical Society, Durham, recently.——Dr. William B. Pritchard, New York, addressed the Raleigh Academy of Medicine, November 27, on "Insanity and Its Medicolegal Relations," at a supper given by Dr. Albert Anderson, superintendent of the state hospital.——The Forsythe County Medical Society has appointed a committee to confer with the school officials of Winston-Salem with regard to the excuse of pupils for prescribed exercises on certificates of physical unfitness.

OHIO

Society News.—Dr. Eugene Lee Myers, St. Louis, addressed the Cincinnati Oto-Laryngologic Society, November 9, on "Foreign Bodies in the Air and Food Passages."——Dr. Richard Sutton, Kansas City, addressed the Academy of Medicine of Cleveland at the Cleveland Medical Library Association, December 17, on "Tiger Trails in Southern Asia," illustrated.

Personal.—Dr. Lockhart Nelson, Hillsboro, has been appointed health officer of Highland County to succeed Dr. Kirke R. Teachnor, who has resigned after four years' service to engage in private practice.——Dr. Roy K. Evans, Ada, for five years health officer of Hardin County, has resigned to engage in private practice at Put-in-Bay, where, it is reported, he will be the only physician on that island and the adjacent islands, North Bass and Middle Bass. Dr. Chalmer C. McLaughlin has been appointed health officer of Hardin County to succeed Dr. Evans.

Annual Conference of Health Officers.—One hundred and fifty of the 179 Ohio health districts were represented at the seventh annual conference of health officers with the state department of health, Columbus, November 8-13. The program was unique in that reports of committees assigned to do definite research work on rabies, milk, communicable diseases and immunology, and rural sanitation were the major consideration. Dr. Winford P. Larson, director and professor of the department of bacteriology and immunology, University of Minnesota Medical School, discussed detoxified toxin and a new method of immunization against diphtheria and scarlet fever by a single treatment. George F. Vincent, Ph.D., president of the Rockefeller Foundation, Drs. Leora G. Bowers, Dayton, and Leslie L. Bigelow, Columbus, president and president-elect, respectively, of the state medical association, and Dr. A. Graeme Mitchell, University of Cincinnati College of Medicine, were among the speakers. Dr. Harry L. Rockwood, Cleveland, was elected president of the Ohio Society of Sanitarians, and Dr. Elgie R. Shaffer is still the secretary-treasurer.

PENNSYLVANIA

Society News.—The Shenandoah Valley Medical Society celebrated its twenty-first anniversary at a banquet at the Hotel Ferguson, Shenandoah, November 17; Dr. Milton S. Kistler, the guest of honor, was presented with a silver-mounted smoking set.——Dr. William P. Brown, Philadelphia, of the Pennsylvania Tuberculosis Society, addressed the December meeting of the Lancaster City and County Medical Society on "Management of Tuberculosis."——Dr. William Martin, Atlantic City, N. J., addressed the Lycoming County Medical Society, Williamsport, December 10, on "The Rationale of Electrotherapy."

Remedy Proposed for Child Marriages.—A study made during the last few months from records of the state bureau of vital statistics shows, it is reported, that 521 girls under 16 years of age were married in Pennsylvania during the year 1924. According to judicial decisions under the common law, the legal minimum marriageable age in the state is 14 years for boys and 12 years for girls. The Pennsylvania Conference on Social Welfare plans to sponsor a bill before the next general assembly to raise the minimum age to 16 years for both sexes and give the juvenile court the right to waive the age minimum in special cases.

State-Aided Hospitals in Pennsylvania.—Since colonial days, Pennsylvania has subsidized, to a greater or less degree, her private charities, especially the hospitals. A bulletin has just been published by the Department of Public Welfare, which gives accurate data on the cost of maintenance of the state-aided hospitals for the fiscal year 1924. The total receipts reported by the 149 state-aided hospitals during this year were $15,572,393; of this sum the patients contributed $10,086,465; the state's contribution was $2,171,623; local aid amounted to $1,348,168; endowment earnings, rents and income from funds were $825,618; and from miscellaneous sources $1,140,517 was received. For every day of treatment, the patients contributed $2.73 and the state 59 cents. The daily per capita cost of maintenance of these hospitals was $4.14, distributed thus:

Household expenditures	$1.66
Professional care of patients	1.17
Operation of plant	0.50
Maintenance	0.35
Administration	0.30
Fixed charges	0.11
Outpatients	0.04
Social service	0.03

With 15,822 beds available, the 149 state-aided hospitals cared for 285,402 patients and rendered 3,701,433 days of treatment, of which 33.2 per cent were accepted as free days by the department of welfare. The average duration of treatment per patient was thirteen days; the average use of hospital beds was 63.5 per cent, and the average use per bed was eighteen patients a year.

The study showed that more than a hundred million dollars is invested in hospital property in Pennsylvania. Sixty-nine of these state-aided hospitals reported endowment at the rate of $1,559 per bed for each patient, or a total of $13,778,049. In the introduction to this report, the secretary of public welfare, Dr. Ellen C. Potter, says that this great state charity has provided for the extension of hospital service to the small town and rural community to an unusual degree; she considers, however, that the diversion during the last century of so large a sum into private charitable undertakings has seriously handicapped the state's activities in caring for the mentally ill, the juvenile delinquent and the criminal.

Philadelphia

County Society Election.—Dr. Frederick S. Baldi was elected president of the Philadelphia County Medical Society at the annual meeting, November 17; Dr. Isidor P. Strittmatter, president-elect; Dr. Orlando H. Petty, vice president; Dr. Henry G. Munson, secretary, and Dr. Edward A. Shumway, treasurer. Dr. Seth A. Brumm, Dr. William E. Parke and Dr. Louis Lehrfeld were elected directors.

Hospital News.—A memorial tablet dedicated to the late Dr. James Thompson Schell, founder of the Northwestern General Hospital, was unveiled, November 17, at the entrance of the institution. Dr. Schell was medical director and chief of the hospital until his death, February 22. The address was made by Dr. Alfred Gordan, neurologist at the hospital; other speakers were Dr. Leonard Napoleon, Boston, medical director, and Frank Sullivan, treasurer of the board of trustees.——A campaign to raise $25,000 was started by the Frankford Hospital, November 18.——The Jewish Hospital in the northern section of the city is preparing to erect a 100-bed maternity building; this hospital was established in 1865 in West Philadelphia and moved to the northern section of the city fifty-two years ago.

Clinics for Small Industrial Plants.—Nineteen industrial firms of the city have entered into an agreement with the Philadelphia Health Council and tuberculosis committee, whereby health supervision of employees will be obtained. The plants have been grouped, according to the agreement, for administrative purposes with four units of about 4,000 employees each. An industrial nurse is assigned to each unit, and a minimum of three hours medical service for each 100 employees will be provided each week. Physicians will also respond to emergency calls, and dispensaries are to be provided by each firm, fully equipped for the treatment of minor accidents and illness. Annual physical examinations of all employees will be made; sanitary surveys of the plants will be instituted; there will be classes in first aid provided for employees, and the cost of the health service will be shared by the firms participating and by the health council. The medical work, it is reported, will be done by Drs. William J. McConnell and Glenn S. Everts of the health council staff.

TENNESSEE

Personal.—Dr. James L. Minor, Memphis, it is reported, has donated property valued at $100,000 to the George Peabody College for Teachers; an annuity will be paid Dr. Minor until his death, at which time the entire estate will go to the college.—Dr. Herbert Acuff, Knoxville, was elected president for the fourth time of the Tennessee Tuberculosis Association, November 30.——Dr. C. A. Collins, Montgomery, Ala., has taken up work with the Dyer County Health Unit.

Decrease in Typhoid in Chattanooga.—There had been fifty-two fewer cases of typhoid reported to the health department of Chattanooga up to November 29 than there were in the previous year. The health officer, Dr. Charles B. Crittenden, is reported to have said that the decrease was due to the large number of persons immunized against typhoid and to better sanitation. Of the sixty-four cases which had been reported this year, seventeen were contracted outside the city, and twenty gave a history of having drunk water from wells or springs. There had been five deaths from typhoid during the year.

TEXAS

Society News.—More than a hundred physicians attended the Third District Medical Society meeting at Lubbock, in October; the next meeting will be in Amarillo, April 12-13.——The Fourth District Medical Society will meet next at Ballinger; Dr. John W. Tottenham, Brownwood, was elected president at the recent meeting at San Angelo.——The Harris County Medical Society entertained the South Texas District Medical Society recently at Houston; the next meeting of the district society will be at Lufkin; Dr. William Lapat, Houston, was elected president at the Houston meeting.——The Gregg County Medical Society entertained the Northeast Texas District Medical Society; the district society will meet next at Marshall; Dr. Robert Y. Lacy, Pittsburgh, was reelected president.——Dr. John H. Hunter, Carmona, entertained the physicians and others of Polk and Corrigan counties at a dinner, in October.

VIRGINIA

New County Society Presidents.—The following physicians have recently been elected president of the county society indicated:

Dr. Edmund P. Tompkins, Lexington, Rockbridge County Medical Society.
Dr. Lyle F. Hansbrough, Front Royal, Warren-Rappahannock-Page County Medical Society.
Dr. Harry E. Whaley, Victoria, Lunenburg County Medical Society.
Dr. John A. Gibson, Leesburg, Loudoun County Medical Society.
Dr. George Craig Eggleston, Amelia, Amelia County Medical Society.

John Horsley Memorial Prize in Surgery.—The first award of the John Horsley Memorial prize in Surgery will be made next June at the commencement exercises of the University of Virginia Medical School. Theses entered for competition must be in the hands of the committee at the university before Feb. 1, 1927. All graduates of the medical department of the University of Virginia of not more than fifteen years' standing are eligible to compete. The prize of $1,000, established by Dr. John Shelton Horsley, Richmond, as a memorial to his father, to stimulate interest in the scientific aspects of surgery, will be awarded every two years. The subject should be some surgical problem the solution of which depends mainly on original research.

WISCONSIN

Liquor Licenses Revoked.—The prohibition administrator with headquarters at St. Paul during November revoked the liquor licenses of the following for the reason indicated:

Dr. James D. Nicholson, Milltown, writing prescriptions without making a physical examination and knowing that the prescriptions were not to be used in securing liquor for medicinal purposes.

Dr. Howard A. Sharpe, Verona, for writing prescriptions for himself, and also for writing prescriptions for people without making a physical examination.

Society News.—Dr. Edward Evans, La Crosse, addressed the University of Wisconsin Medical Society, November 24, on "The General Practitioner in Medicine," and Dr. Franz Nagelschmidt, Berlin, Germany, on "Diathermy: Its Scope in Medical Practice."——Dr. William M. Thalhimer, Milwaukee, addressed a joint meeting of the University of Wisconsin Medical Society and the Sigma Sigma Honorary Medical Society, Madison, December 7, on "Insulin and Glucose in Nondiabetic Acidosis."

Personal.—Dr. Raymond C. Meyer, Plymouth, has been appointed medical director of the new Sheboygan County tuberculosis sanatorium, and Dr. Howard E. Curl, Sheboygan, has been appointed in charge of the roentgen-ray work at the hospital.——Jesse George Crownhart, executive secretary of the Wisconsin State Medical Society, was married, October 30, to Miss Hildegarde Lucretia Wool of Janesville.——Dr. Stuart A. McCormick has resigned as medical director at the state prison at Waupun to engage in practice at Almond.

GENERAL

Increase in Production of "Surgical Appliances."—The U. S. Department of Commerce made public, December 1, data compiled by the bureau of the census in the biennial census of manufactures. Establishments engaged primarily in the manufacture of surgical appliances, including bandages and dressings, during 1925 reported products to the value of $54,333,266, an increase of 24.1 per cent as compared with 1923; miscellaneous products made by these firms amounted almost to another million dollars. The specific products of this industry were said to be elastic hosiery and belts, braces, extension shoes, arch supports, shoulder braces, trusses and "electric belts."

Largest Gift to Red Cross.—At a meeting of the board of directors of the American Red Cross, Washington, D. C., December 8, it was announced that securities valued at $1,400,000 from the trust estate of James A. Schrysmer, formerly president of All-America Cables, would be turned over to the endowment fund of the organization during the coming year. Mr. Schrysmer, who died in 1918, provided that half of his estate should go on the death of his wife to the Red Cross and half to St. Luke's Hospital, New York; in addition to these securities, half of the proceeds of the sale of Mr. Schrysmer's home in New York and his country home in Seabright, N. J., will also go to the Red Cross.

Hospital Insures Employees.—An insurance company recently accepted about $300,000 of group life insurance on applications from the Vanderbilt Hospital and School of Medicine, Nashville, Tenn., and from the Grand Forks Deaconess Hospital, Grand Forks, N. D. The Grand Forks Deaconess Hospital is said to be the first in the northwest to participate in group insurance for the benefit of its employees. The hospital management bears the cost entirely. Each individual policy includes disability and death benefits, the latter being payable to any one other than the employer. The policies in this hospital amounted to $2,000 for all supervisors and other officials; $1,000 for student nurses and $500 for other employees not classified.

Anthropologic Journal Transferred.—To assure its permanency and further development, the *American Journal of Physical Anthropology*, by mutual consent and agreement, has been transferred from its founder and publisher, Dr. Ales Hrdlička, to the Wistar Institute of Anatomy and Biology, Thirty-Sixth Street and Woodland Avenue, Philadelphia, effective, Jan. 1, 1927. There will be no change in the scientific policy, and Dr. Hrdlička, U. S. National Museum, Washington, D. C., to whom all communications for publication should be sent, will continue as editor. The journal will be published for the present on the thirtieth of March, June, September and December, and will be sold by the volume, not by the year. The price per volume of 500 pages is $6 (foreign, $6.50). Orders should be sent to the publisher.

Society News.—At the annual meeting of the Clinical Orthopedic Society, Detroit and Ann Arbor, November 5-6, Dr. Henry W. Meyerding, Rochester, Minn., was elected president; Dr. Walter G. Stern, Cleveland, Ohio, vice president; and Dr. Robert V. Funsten, Detroit, Mich., secretary-treasurer. The next annual meeting will be held in Memphis, Tenn.——Dr. Edwin C. Ernst, St. Louis, was elected president of the Radiological Society of North America at the annual meeting in Milwaukee, December 1, and Dr. Amédée Granger, New Orleans, vice president.——At the recent annual meeting of the National Medical Association in Philadelphia, Dr. Carl G. Roberts, Chicago, was installed as president, Dr. Alfred E. Thomas, Detroit, was elected a vice president, and Dr. Clyde H. Donnell, Durham, N. C., general secretary.

Medal for Accident Prevention Awarded to Union Pacific.—The president of the American Museum of Safety announces that the Union Pacific System has been awarded the E. H. Harriman Gold Medal for the most conspicuous accident prevention work in America during the last year. The committee representing the Interstate Commerce Commission, the American Railway Association, the Bureau of Railway Economics, and the Museum of Safety, whose president, Mr. Arthur Williams, was chairman, based the award on records submitted to the Interstate Commerce Commission. Not a passenger was killed on the Union Pacific Railroad System during 1925, although it operated more than a billion passenger miles and more than 53,000,000 locomotive miles; only five employees were killed in nontrain accidents, including shop accidents, and only 407 employees were injured in such accidents during 105,000,000 man-hours of work; in train and train service accidents, only twenty-four employees were killed. All railroads of the country were entered in the competition.

Few College Women Take Up Nursing.—The dean of the Yale School of Nursing, Annie W. Goodrich, in her annual report, states that among the total enrolment of 15,898 students who entered 134 schools of nursing during the last five years, only 115 were college graduates, while sixty-six had a partial college education. This situation is considered astounding by Dean Goodrich, in view of the increasing enrolment of women in colleges, and can be explained only by the hospital control of nursing education with its adherence to apprenticeship methods and military regulations in the belief that the cost of nursing service in institutions may be held to a minimum. It is said that this system will force the schools for nursing into the educational system, "where they long since should have found their place." It is also greatly increasing the demand for qualified nurse teachers, already far in advance of the supply. Positions for the class of 1926 of the Yale School of Nursing were available immediately on graduation, entailing responsibilities and capacities quite beyond those justified by the mere professional nurse.

Report of Commissioner of Pensions.—There were 501,723 pensioners on the roll, June 30, 1926, according to the annual report of the commissioner of pensions to the Secretary of the Interior. The losses to the roll during the year numbered 47,941 and the gains 37,127, making a net loss for the year of 10,814. Of the losses, 46,697 were by death; 19,880 of these were Civil War veterans and 22,724, Civil War widows. There are on the roll nineteen widows of soldiers who rendered service in the War of 1812, and nine soldiers on account of service in the war with Mexico. Although sixty years has elapsed since the close of the Civil War, much of the work of the pension bureau still arises out of service in that war. The total disbursements for pensions of all classes on account of Civil War service for the last fiscal year was $171,605,623.27. There were issued orders for medical examination during the year to the number of 3,358 in cases of Civil War veterans, 61,078 in cases of Spanish War veterans, 4,807 in disability claims under the general laws, making a total of 69,243; for the fees and expenses of the examinations, $457,598.23 were paid.

Report of Freedman's Hospital.—For the first time in the history of the Freedman's Hospital, Washington, D. C., the patients admitted from states exceeded those from the District of Columbia in the last fiscal year. During this period, 4,227 patients were admitted, which, with the 207 remaining from 1925, made a total of 4,431 as against 4,271 for the previous year. There were 970 pay patients admitted, or ten more than last year, but the receipts from this source, $23,533.50, were $32.50 less than during the previous year. There were treated in the outpatient department of the hospital 19,262 patients, an increase of 417 over the preceding year. The indigent patients came from thirty-two states, the District of Columbia and six foreign countries; the pay patients came from nineteen states and the District of Columbia. The surgeon-in-chief, Dr. William A. Warfield, in his

annual report, notes that the number of admissions for the year showed an increase of 4 per cent over 1925, the amount of work in roentgen-ray diagnosis increased 48 per cent, and that in roentgen-ray therapy, diathermy and actinic ray increased more than 300 per cent, indicating, he says, a much wider use of this department in the study and treatment of disease.

Annual Report of Leprosarium.—The U. S. Public Health Service which maintains the national leprosarium at Carville, La., reports that sixty-two patients were admitted to the institution during the year ending June 30, and that a total of 394 lepers have been admitted since the federal government took over the hospital in 1921. Twenty-nine patients died during the last fiscal year, making the mortality rate for this group 112 per thousand; twenty-five escaped from the hospital, and thirteen of these returned for treatment; three patients were paroled, as being no longer a menace to public health. One leper was deported by the bureau of immigration. Seventy-five operations were performed during the year; 75,000 surgical dressings were made, and 37,902 physiotherapy treatments were given. Admissions were from the following states:

Alabama	1	Missouri	2
Arkansas	1	Michigan	2
California	9	Montana	2
Florida	7	New Jersey	2
Georgia	1	New York	4
Illinois	2	South Carolina	1
Louisiana	20	Texas	5
Massachusetts	1	Washington	1
Mississippi	1		

News of Epidemics.—The public schools of Madison, N. J., were ordered closed, November 20, it is reported, following a conference of health and school officials on the scarlet fever outbreak in that community; other public gatherings of children were also prohibited for a period of ten days.——There were seventeen cases of diphtheria reported present in the city of Moundville, W. Va., November 20.——Eight cases of typhoid were reported present in the village of East Kane, Pa., November 22.——An outbreak of scarlet fever in the Cliff-Gila district, N. M., led to the closing of the schools and other public meetings, November 23.——The schools of Dallas City, Ill., were closed, about November 25, on account of an outbreak of scarlet fever.——The schools of Belle Center, Ohio, were closed for the ten days ending November 29, in an effort to check the spread of scarlet fever in that community.——Chickenpox was reported, November 29, widely prevalent in Philadelphia, 159 cases having been reported the previous week.——Twenty cases of smallpox were reported recently at Waverly, Ohio; no new cases had developed in the ten days previous to November 25.——The schools of Sanford near Tiffin, Ohio, were closed about December 1 on account of scarlet fever.——One hundred and eighty-five homes were reported under quarantine in Billings, Mont., November 28, on account of measles.——An outbreak of twenty-six cases of smallpox was reported from Topeka, Kan., December 8.——Two deaths had occurred up to December 1 in a milk-borne epidemic of typhoid at Hastings, Neb., and several new cases were being reported daily.——The outbreak of smallpox at Brazil, Ind., amounted to about fifty cases, December 1.——The epidemic of typhoid fever at Watseka, Ill., amounted to thirty cases with three deaths up to December 14, when it was considered under control; the last new case developed November 18.

FOREIGN

Number of School Physicians in Japan.—The *Japan Medical World* notes that an investigation made by the department of education of Japan shows that the number of school physicians in elementary, middle, technical and higher girl schools, except the prefectures of Tokyo and Kagoshima, is 11,765; they are attached to 17,421 schools, which have this special service for the benefit of children.

Appeal for Aid for Deaf.—The Association des mutilés de l'oreille, founded in 1924, to promote the interest of those who are deaf, is soliciting subscriptions outside of France to assist in realizing its aim of founding in Paris a home for the deaf. Correspondence, remittances by draft, money orders, or French or foreign bank-notes, should be addressed to Mr. Robert Morche, general secretary and treasurer, 103 Avenue de la Marne, Paris-Asniéres (Seine), France, who will acknowledge receipt. The society is under the patronage of M. le Président Raymond Poincaré, MM. les Maréchaux Foch and Lyautey M. le Général Gouraud, governor of Paris, together with a large group of ministers, senators and members of the house of deputies.

Government Services

Report of Special Committee on St. Elizabeth's Hospital

The special committee of five superintendents of insane hospitals appointed by Secretary Hubert Work of the interior department to make a survey of St. Elizabeth's Hospital, the government's institution for the insane in the District of Columbia, has reported to the Secretary of the Interior as follows:

St. Elizabeth's Hospital is not excelled by any hospital known to us in competence of its medical and nursing staffs; in completeness of provision for medical and surgical treatment of physical illness of patients; in specialized study of difficult and doubtful mental conditions; in interest and earnestness of effort in medical research; in the use of measures of prevention and cure of mental illness; in dissemination of the results of its research and experience through numerous publications for the benefit of the public and the medical profession; and, finally, in utilizing exceptional educational facilities in training physicians, nurses and welfare workers for service in state hospitals and community. These results have been achieved under the inspiration and direction of the present medical superintendent and have made, in all these respects, St. Elizabeth's Hospital preeminently a modern hospital for the scientific treatment and humane care of mental patients.

Serious overcrowding of the untidy and excitable classes of patients exists, especially in old buildings erected forty or more years ago. In these there is great deficiency of toilets, and bathing facilities and floors are insanitary. Good sanitation is impossible under these conditions. Otherwise, housing of patients and sanitation in permanent buildings are good.

Machanical restraint of patients is rare and always carefully supervised by a physician.

Food is abundant, wholesome and palatable.

Laws relating to admission of patients from the District of Columbia are very defective and antiquated.

They prohibit hospital treatment of such patients beyond thirty days without adjudication as insane by a jury trial and deprive them of all civil rights after discharge from the hospital. These can be restored only by judicial action, which may require a jury trial.

Recommendations are made for correcting this situation.

The United States government has a profound obligation and, we believe, a rare opportunity at this time, not only to improve conditions described in this report, but to establish high standards in this important field of human welfare, as an example for emulation by the different states of the Union.

It should be noted that the United States government is directly responsible for the treatment of some 20,000 mental patients; that in the whole country some 300,000 mental patients are supported largely at public expense in institutions; that more than 75,000 new patients are added to this number each year; that public expenditure in their behalf runs high into the millions of dollars; that New York State alone in 1925 spent almost $20,000,000 in support and construction of hospitals for the insane, and Massachusetts in the same year for a similar purpose spent 15 per cent of all state expenses.

The magnitude and humane importance of this matter warrant the same attitude of the federal government toward it, as was long ago assumed in agriculture and other departments, in active research to add new knowledge and persistent endeavor to improve old methods and test out new methods with a view to benefit all the states and the general public. These ends could be served in no better way than in the development of St. Elizabeth's Hospital along the path in which it has already proceeded a long distance as a center of research in psychiatry and a training school for the physician, nurse and welfare worker for service in state hospitals and community. This would render the largest service and meet the greatest need today in the field of mental medicine.

RECOMMENDATIONS

The medical advisers unanimously recommend:

1. That, inasmuch as mentally sick patients should have the opportunity to secure treatment at St. Elizabeth's Hospital in the same manner as patients suffering from physical illness enter a general hospital for treatment, provision by law should be made for the following forms of admission without court procedure: (1) voluntary admission; (2) temporary care; (3) emergency admission.

Where the mental condition of a patient does not permit of cooperation and hospital treatment is necessary against his will, commitment by court

procedure should be provided in one of the following ways: (1) Indefinite commitment without adjudication: by jury trial unless requested by the patient or family; (2) commitment for observation pending determination of insanity.

Provision authorizing release on trial visit of unrecovered patients and discharge at end of specified period.

Creating by regulation of a liaison officer with specified duties requiring inquiry into regularity of admission and commitments to St. Elizabeth's Hospital and investigation of the question of insanity and condition of any patient.

2. That immediate provision be made for 1,500 patients, of which relief from overcrowding requires 500 beds; replacement of temporary buildings erected in war time, 500 more, and assured increase of insane the remaining 500.

In carrying out this recommendation a careful plan of development of St. Elizabeth's Hospital should be prepared which would meet both present and future needs.

Its requirements would be: 1. A new medical and surgical hospital of 150 beds. 2. A new reception hospital for 300 men and 200 women. 3. Better general classification of patients providing suitable separation of classes in proper relation to each other, namely: (*a*) untidy and feeble patients; (*b*) excitable patients; (*c*) patients susceptible of training in useful occupations, and (*d*) farm colony at Godding Croft. 4. Centralization of kitchens and storerooms.

The report was the unanimous action of the committee, which consisted of: Dr. George M. Kline, commissioner, Massachusetts Department of Mental Diseases, State House, Boston; Dr. Harry W. Mitchell, superintendent, Warren State Hospital, Warren, Pa.; Dr. Arthur H. Ruggles, Professor of psychiatry at Yale, former superintendent, Butler Hospital, Providence, R. I.; Dr. Owen Copp, consultant, Pennsylvania Hospital, Philadelphia, and Dr. Samuel E. Smith, provost, Indiana University, Indianapolis.

Liberalized Laws Increase Admissions to Government Hospitals

There was an increase of 20 per cent during 1925 in the number of admissions of Veterans' Bureau beneficiaries to government hospitals, due, according to the annual report of the director of the bureau, to the liberalized provisions of the World War Veterans' Act of 1924. The total number of admissions was 69,441, and of these, 41 per cent had never before been under hospital treatment by the bureau. The largest group of these first admissions (18,890) were veterans with general medical and surgical disabilities, and the second largest group (5,363) were veterans with pulmonary tuberculosis. It is significant to note that among the World War veterans admitted to hospitals during the year, an average of one out of three had a nonservice connected disability. The admissions during June, 1926, of patients with nonservice connected conditions were 49 per cent greater than in the corresponding month of 1925.

New Navy Commanders

The president has approved the action of the Navy Selection Board in recommending the promotion of the following medical officers to the rank of commander:

Sanky Bacon	Harry Robert Hermesch
Carroll R. Baker	Jasper V. Howard
Walter A. Bloedorn	Daniel Hunt
John T. Borden	Edwin Lee Jones
Claude W. Carr	Harry E. Jenkins
Frederick Ceres	Robert F. Jones
Robert G. Davis	Richard H. Laning
William E. Eaton	John J. O'Malley
Walter C. Espach	Lester L. Pratt
George Ruben W. French	Willard J. Riddick
Chester M. George	George A. Riker
Gordon Dyer Hale	John F. Riordan
Frank H. Haigler	William Henry Short
Stanley D. Hart	Lawrence M. Schmidt
Alexander B. Hayward	Luther Sheldon, Jr.
Jesse B. Helm	Chandler W. Smith
Reginald B. Henry	Edward Victor Valz

Noncommissioned Officers' Graduation

Sixty-six noncommissioned officers of the medical department received certificates of graduation from the army field service school at Carlisle Barracks, Pa., November 30; twenty-five of the graduates were from units of the National Guard, the remainder from the medical department of the regular army. The McKinney medal was given to Tech. Sgt. John M. Bailey of the medical department of Carlisle Barracks for having attained the highest standing in scholarship, conduct, soldierly bearing and leadership. The addresses at the graduation exercises were made by Lieut. Col. Charles R. Reynolds, commandant, and Major G. L. McKinney, director of the noncommissioned officers' school.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 26, 1926.

Cancer and Diet

Some interesting experiments to discover the relation of diet to the incidence of cancer were described by Prof. Leonard Hill, in a lecture on "The Purpose and Nature of Food." He stated that he had put groups of mice on various diets. Some were put on a wild diet of wheat, oats, barley, greenstuffs and water. Others were given the diet of Essex farm laborers, consisting largely of proteins and green food. Others had a canteen lunch diet of meat, vegetables and sweets; others, a tea diet of meat, tea, biscuits, bread and butter; while still others had an overroasted diet. The results showed that the mice fed on the tea diet hardly bred at all, while those fed on the diet of an Essex farm laborer had the highest fertility. The remarkable fact emerged—contrary to popular belief—that those fed on the wild diet had the highest cancer mortality, while those fed on the apparently unbalanced tea diet had the lowest cancer mortality. Some writers had recently been stressing diet as a cause of cancer, but there were other special conditions of civilized existence which might contribute to causing the disease. There was no evidence so far that fried and overcooked food was causing an increase of cancer. Hill was inclined to the belief that there was some parasitic infection which set up irritation or some filter-passing germ taking advantage of a condition of irritation.

Public Health in Africa: The British and the French Systems

Col. Sir Edward Thornton was the speaker at a recent Rotary Club luncheon at Pretoria at which many delegates to the Medical Congress were present. He had just returned from a League of Nations inquiry on which he was the South African representative, and he toured the British, French and Portuguese colonies in West Africa. He spoke highly of the efficient French system of public health. He found that Liberia had no public health administration at all, and the inquiry split up into three parts, one to study the British, one the French and the other the Portuguese systems. Complete information was obtained on both the French and the British systems. The climate in the French territories was very varied. The rainfall ranged from nothing in the Sahara Desert to 300 inches at the capital of the territory. The administration was arranged on the lines of small stations encircling the larger stations. There was a large central hospital, and round this were smaller but well equipped hospitals. In connection with the latter were cottage hospitals supplemented by bush dispensaries. The ultimate aim of the government was to have a physician in charge of each dispensary. The French government, in return for imposing conscription on her colonies, had undertaken to bring to them a public health administration with white medicines within reach of every native. The cost of putting enough white physicians into the colonies would have been enormous, and the French therefore had to educate the natives to be physicians. They found, however, with few exceptions, that the African native was not capable of rising to that level, and therefore developed a system of auxiliary native physicians, whose medical certificates were valid only while in government employ. The best natives in the north were more advanced than the best South African natives, but they were not capable of rising to the level of physicians. They had now seventy-eight native auxiliary physicians, 560 nurses and about sixty midwives.

The trouble was that there were not enough auxiliary physicians, but these were fast being produced by the schools. The officials controlled not only native education but their vocations. It was laid down that 85 per cent of the natives must return to the land. Of the rest, some were selected by a board of artisans, and the rest as professional men and women. The vocation of each student was determined by a board in consultation with the parents.

The French native population was 12½ millions, and of these, last year, the bush dispensaries attended to 2½ millions. The native population of the British colonies was 25 millions, and last year only 150,000 of these received medical attention at hospitals. This was because of the comparative excellence of the French system. The French administration spent between 5 and 6 per cent of the budget on medical services. The British, with their very rich colonies, were spending a lot of money. There was a hospital in Nigeria with 200 beds which cost $1,250,000. It was the most perfect and model hospital in the world. There was electric light above each bed to allow each native to read. The patients were treated at a cost of $2 a day. A native medical school costing $2,500,000 had also been erected in Nigeria. The inquiry had felt that the French, at a third of the expenditure of the British, were providing a better medical service. It was the finest Sir Edward Thornton had seen throughout South Africa or India.

Men Versus Women

"The statement made by a recent woman swimmer of the Channel that women are equal to, indeed, surpass, men in athletics, is just nonsense," said Dr. Harry Campbell, lecturing before the Institute of Hygiene. Man, he said, was far more muscular than woman. His greater height depended on his longer nether limbs; hence women were bad runners. There was no such difference in swiftness and muscularity in the case of subhuman animals, such as horses and dogs. "Women," he said, "have smaller lungs and fewer blood cells than men, in the proportion of 4 to 5. In women the vital fire does not burn so quickly as in men. Obviously, they are not adapted like men for a strenuous, muscular life. Mentally, men and women differ in the realm of feeling rather than of intellect. Intellectually, men and women stand somewhat on the same footing. While genius is more common in the male sex, so also is idiocy." The subject of Dr. Campbell's address was "Headache and Other Minor Ailments," and he declared that headache was a malady of civilization. It was certainly rare among uncivilized people. The chief cause was an unhealthy state of the blood, engendered by an unhealthy mode of life, such as unwholesome food, insufficient exercise in the open, stuffy rooms and late hours.

"Surgeons" Produced by the War

One of the aftermaths of the war was that a number of young men, on the basis of experience in military hospitals of war wounds, endeavored to establish themselves as surgeons in London without the civil hospital experience usually found necessary. At the annual dinner of the Royal Society of Medicine, Sir James Berry, speaking with reluctance, but from a stern sense of duty, said that one of the many evil after-effects of the war was that a great wave of well meaning enthusiasm for operative surgery had spread over this and other countries. Many difficult and dangerous surgical operations were being too lightly undertaken by those whose training, experience and judgment were often insufficient, and who were not devoting themselves exclusively to the practice of surgery. Those of them who were behind the scenes in the surgical world saw only too much of what was going on. Successful major operative surgery in civilian practice must depend on a solid foundation of pathologic anatomy and clinical experience. The limited field of war surgery, necessarily concerned, as it mainly was, with the surgery of injuries and otherwise healthy individuals, was in itself alone but an indifferent school for the surgery of civilian practice. The only remedy for this state of things was increase of knowledge in the would-be operating surgeons.

Cancer Research

At a meeting of the general committee of the Imperial Cancer Research Fund, Sir Humphry Rolleston, chairman of the executive committee, said that cancer research exhibited in a striking manner the way in which progress was characterized by a series of successive periods of great activity, with periods of relative quiescence between. The first period followed the discovery by Jensen and Borrel of the transplantability of the malignant growths of the mouse. The work dealt with the cancer cell already fully developed, and the attempts at explanation based on it of the etiology of the disease were, in the nature of inferences, more or less happy. In the second period, the interest shifted to the study of the conditions under which cancer arose in the individual primarily attacked. The results obtained by Fibiger, Yamagiwa and Ichikawa, and by Tsutsui, gave the primary impetus to an enormous amount of work, which still continued, on the actual production of cancer anew, starting with normal animals. The part played by chronic irritation, the relation of the duration and intensity of the irritation to the time necessary for the effects to be produced, and the mutual reinforcement which different agencies gave to each other, had put a rational, sequential facies on many of the features of the natural history of cancer. If the interest and activity aroused are taken as an indication, the work of Gye and Barnard on cancer causation by ultramicroscopic microbes published eighteen months ago could be regarded as starting a third period in cancer research. Both the facts and their interpretation were in dispute, and in these circumstances it was necessary to exercise patience and continue the investigations. Of the various lines of work bearing on the validity of the conception of Gye at present in progress in their laboratories, that of Dr. Begg was farthest advanced. He had worked with the Rous fowl sarcoma and with another new growth of the domestic fowl, which, although differing in structure, behaved in the same way. His results confirmed the existence of two factors, as advanced by Gye, in the successful transmission of these tumors, and would shortly be published.

Birth Control Denounced

Birth control is at present a burning topic. In a presidential address before the League of National Life, D. F. J. McCann (gynecologist) said that the league was formed to influence public opinion against birth control and to foster the perpetuation of family life, a great tradition of the British race. After devoting the greater part of his life to the diseases of women, he unhesitatingly said that the practice of contraception was physically harmful and should be condemned. Dr. H. Sutherland, who has written a book against birth control which gave rise to an action at law by Dr. Marie Stopes, its protagonist, said that the league had been formed to combat the greatest and the most insidious danger now confronting the nation and the empire. Birth prevention was race suicide, and the suicide of a nation required less resolution than the suicide of an individual. The birth rate was still falling. The number of children entering the schools of England and Wales was fewer by 100,000 every year, whereas the proportion of old persons in the country was steadily decreasing. Already statisticians were discussing the date, not far distant, when the decline of our population would begin.

PARIS

(From Our Regular Correspondent)

Nov. 18, 1926.

Surgical Suppression of Chronic Visceral Pains

Prof. Emile Forgue of the University of Montpellier, during the "journées médicales" held in his city, expressed his views on nerve resection for control of chronic visceral pain. He held that healthy abdominal viscera are not absolutely without direct sensibility as Lemnander has contended, and that sensibility becomes marked when the viscera are pathologically affected, the seat of the sensibility being ordinarily in the vascular and nervous pedicle of the organ. The pain transmitted by the sympathetic nerves to the paravertebral ganglions may, in turn, awaken reflex cutaneous sensation in the same part of the body but not necessarily over the exact site of the lesion. McBurney's point does not correspond anatomically to the exact site of the diseased appendix. Likewise, reflex contraction of the muscles of the abdominal wall may result from a far distant lesion. In order to suppress pain, intervention should be made at the level of the communications of the branches of the sympathetic nerve with the spinal cord. Likewise, injections of cocaine made at the level of the paravertebral ganglions anesthetize corresponding parts of the body. But this is only a temporary measure for the performance of a surgical intervention. For long-continued pains, corresponding to chronic abdominal trouble, M. Forgue prefers the operation of von Gazza, resection of the rami communicantes, an easy and benign operation much superior to excision of the ganglions themselves. But resection involves both gray and white fibers, for the surgeon cannot dissociate them, and Forgue thinks that in many cases it is better to resect branches of the sympathetic trunk. This has been successfully accomplished with regard to the stomach, the bladder and the female adnexa, with permanent relief from pain without impairing unduly normal functioning of the organ. That is better than destruction of the sympathetic fibers about the artery, as practiced by Leriche, which operation should be reserved for hypotrophy of the organ, a phenomenon independent of the pain, even when the two factors are associated. Furthermore, in the ovary, the nerves and the vessels rarely have parallel development. Section of the presacral nerve as practiced by Cotte of Lyons in fifty cases with success and without untoward consequences is also preferable. Most cases of painful ovaritis, with minimal anatomic lesions, are associated with small neuromas, which section of the presacral nerve isolates from the perception centers.

Paranoiacs

Dr. Genil Perrin, chief physician of psychopathic institutions of the department of the Seine, points out that a large number of mild but authentic paranoiacs have played important rôles in history—Jean Jacques Rousseau, Tolstoi, the founders of religious sects, and others. The character of Don Quixote is that of a paranoiac. Mild paranoiacs abound in present-day society in the guise of unappreciated inventors, blindly revolutionary politicians, excessively bold opponents of traditional ideals in art, and worldly snobs. Perrin gives four main characteristics of paranoiacs, all of which must be present at the same time: (1) overestimation of the ego; (2) hostile suspicion toward one's environment; (3) misinterpretation of facts, and (4) social inadaptability. The absence of any one of these characteristics is sufficient to disprove the existence of the syndrome. These subjects are somewhat eccentric, entertaining too exalted ideas of their merits, are too sensitive, go too far in their demands, are too heedless of the teachings of actualities, are too much inclined to make logical deductions, and are too hostile toward indispensable adaptation. They delve too much in their emotional and intellectual manifestations. But evidences of excess are characteristic of all men of mark. It is therefore difficult to say where the dividing line is between sound and unsound minds, and that explains the statement of Lombroso that there are not any geniuses without some stigma of madness.

Sudden Death Following Prostatectomy

Professor Pousson of Bordeaux reports having had in his practice three cases of sudden death as the result of suprapubic prostatectomy. Unfortunately, death following prostatectomy is not exactly rare, although statistics do not always mention the fact. The fatal outcome is considered an accident of convalescence, connected with the general condition of the patient and independent of the operation. In the three cases of M. Pousson, death ensued suddenly on the twentieth, twenty-fifth and twenty-eighth days, respectively, after the operation, and after the abdominal wound had healed, urination had become spontaneous and the urine clear. The general condition of the patients was excellent, and they had not had rise of temperature after the intervention. Pousson, seeking to analyze the causes of such an outcome, can only assume the existence of a phlebitis of the true pelvis, associated with a certain amount of periprostatitis. It should be recalled also that tardy embolism has been pointed out after appendectomy and the removal of large fibromas.

Treatment of Arterial Hypertension

Professor Brelet of the Ecole de médecine of Nantes, reviewing the many remedies advocated in arterial hypertension, reaches the conclusion that there is not one on which the physician can rely with any certainty, even among those most commonly employed. Sodium nitrite is usually ineffective and sometimes dangerous. The action of glyceryl trinitrate is unreliable and transient. Benzyl benzoate and tincture of garlic have had only a short vogue and are seldom effective. Mistletoe and chloral are more efficacious, but their effects do not extend over more than ten days. Sodium citrate has a good effect for a short time; but, if the doses are increased unduly and the remedy is employed every day, the tension is raised instead of lowered. Thermal baths at Nauheim and Royat give only temporary results. The truth is that arterial hypertension is not a morbic entity but rather a symptom that may appear under different conditions.

Limited Spinal Anesthesia

For slight surgical operations limited to the perineum, anesthesia strictly limited to the region concerned can be induced by a method recently devised by Dr. Ravaut, physician to the hospitals of Paris. The procedure consists in introducing within the spinal canal, by the ordinary technic, two drops of a 50 per cent solution of procaine hydrochloride, which is very viscous and which, the patient being seated, falls at once by its own weight to the base of the tubular sheath and limits its action without affecting the nerve roots or the cord. The anesthesia lasts for an hour and a half. The small quantity of procaine hydrochloride does not cause any unfavorable reaction on the general condition of the patient.

An Institution for Backward Children

At Limours, near Paris, a new institution has been founded by M. Herriot, minister of public instruction, for the benefit of children of retarded physical and mental development, and primarily for those who are the offspring of war victims. The institution, which bears the name "Institut Clamageran," is financed by the Assistance aux blessés nerveux de la guerre (which had previously established a home for the nerve shattered of the war), with the aid of the city of Paris, the Office des pupilles de la nation, and British contributions. The new institution will accommodate 150 children, who will

receive, in addition to a common school education, special instruction fitting them for agricultural pursuits.

Abolition of Military Hospitals

The minister of war has decided, for economic reasons, to abolish the military hospitals at Calais, Cambrai, Toul, Thionville, Sarrebourg, Morhange, Colmar, Mulhouse, Chambéry, Bastia, the Bequet Hospital at Bordeaux, the Vilemanzy Hospital at Lyons, and the home for convalescents at Sées (Orne).

GENEVA

(From Our Regular Correspondent)

Nov. 17, 1926.

Smelters' Fever

The disease of brass workers was first described by Blandet, in 1846, and at present is called "smelters' fever" on the continent. Of late it has been given some attention by Heim, de Balsac, Agasse-Lafont, Feil and others. A brass worker does his work as usual and appears normal, but as soon as he leaves the workshop or during the hour preceding closing time he feels prostrated, with muscular asthenia, chills, dyspnea and nausea. The temperature attains 100 F. During the night profuse sweating marks the end of the attack and the patient sleeps. On the following day he feels as fit to work as ever. A single attack is without danger, but repeated attacks disturb or prevent feeding, increase fatigue, produce emaciation and finally set up a true cachectic state. In order to diminish the risks of intoxication, the following measures are recommended: (1) the installation of wash-bowls, well aired workrooms and clean tables for serving food; (2) periodic examination (every two to three months) of the workmen in order to eliminate those susceptible to the disease, and (3) drinking milk at the factory.

Skin Reactions in Tuberculosis

In a communication to the Swiss antituberculosis association, Dr. M. Jaquerod, referring to cutaneous reactions, stated that all that is actually known is that once the organism is infected with the tubercle bacillus, although the infection is strictly localized to a very small focus (lymph node), and morbid manifestations are absent (latent tuberculosis), a new humoral specific substance appears in the blood and lymph, impregnating all the tissues of the organism. This is called the allergic state, which is revealed by tuberculin reactions. This allergizing substance is not tuberculin itself but a substance of the nature of antibodies (lysin, antituberculin) resulting from a defensive reaction of the infected cell elements. It is the contact of tuberculin with this substance that produces the specific tuberculin reaction. Tuberculin reaction is impossible unless there is a previous infection by the tubercle bacillus and also a certain degree of immunization (reaction-infection and resistance). By itself the reaction cannot show whether the lesions are active or latent. However, it is stronger in more resistant subjects, so that it has some relative prognostic value among patients belonging to the same clinical category. Thus, taking two subjects with localized chronic tuberculous cavities, the one who most strongly reacts may be regarded as the more resistant of the two. But it is the nature of the lesion that governs the prognosis, and it is better to have a tuberculous pleurisy or a small apical lesion, even with a weak cutireaction, than a tuberculous cavity with a strong reaction.

Renal Diabetes

At a recent meeting of the Geneva Medical Society, Dr. Bickel reported an instance of renal diabetes and remarked that diabetes was not settled by insulin therapy. Diet remains the important treatment, and to make a proper selection of food the metabolism must be studied, as well as the urine and the blood. The amount of sugar, ammonia, acetone, etc., in the urine, blood and cerebrospinal fluid are interesting, but in practice laboratory data are often bewildering to the practitioner. Determination of the glycemia while fasting and the results of induced hyperglycemia will detect early diabetes, and for this reason is especially valuable for insurance companies. Renal diabetes was first suspected by Lepine of Lyons, who was struck by the fact that there were subjects with marked glycemia and mild glycosuria; hence, he admitted a renal factor in these cases. The prognosis of renal diabetes is good, but the diet must be carefully supervised for a long time.

Hemopoietins

Dr. H. Nakao, working in the physiologic institute of the University of Bern, has recently shown that hemopoietins are present in the blood which cause regeneration of the red corpuscles; they exist in the bone marrow. After removal of the thymus and thyroid, these hemopoietins lose their function. If the spleen is then removed, their action again becomes manifest. These facts are new proofs of the stimulating influence of the thyroid and thymus on the formation of the elements of the blood and the inhibiting influence of the spleen on the same function. Sodium nucleinate, just like the hemopoietins, may produce stimulation of the bone marrow when the thymus and thyroid have been preserved; the signs of this medullary stimulation disappear after removal of the thymus and thyroid. In animals from whom the spleen is afterward removed, the reaction again becomes very distinct.

ITALY

(From Our Regular Correspondent)

Oct. 15, 1926.

The Prophylactic Value of Arsphenamine in the Treatment of Syphilis

In a paper presented before the fourth national congress of the Società italiana d'igiene, Prof. G. Piccardi emphasized the great importance of arsphenamine treatment as a prophylactic against the spread of syphilis. It is a question, of course, of indirect prophylaxis. Arsphenamines shorten the contagious period of the disease, thus reducing the possibility of transmission of the disease to persons who are healthy. Statistics collected by the author show that of 127 patients in the stage of initial sclerosis or at the beginning of the secondary stage subjected to a combined arsenical-mercurial treatment there were only eight clinical recurrences of infective lesions and eight serologic recurrences, whereas, with mercurial treatment alone, secondary manifestations and recurrences are almost constant.

With arsphenamine treatment alone, almost 100 per cent of subjects do not have recurrences of infective lesions. According to Piccardi, it is chiefly to this prophylaxis that is due the marked diminution of cases of syphilis diagnosed in Italy from 1917 to 1925, the last year for which statistics are available. The statistics of the municipal dispensaries for the control of venereal diseases in Turin show that venereal disease has been reduced from around 5,000 new cases annually in the period from 1911 to 1916 to 2,700 new cases in 1924, of which 1,600 and 1,200 cases, respectively, were syphilis.

In illustration of the advantages secured in the campaign against congenital syphilis by means of arsphenamine treatment applied to syphilitic parents, Professor Piccardi gave his personally collected statistics on forty-five marriages in which one or both parties to the contract were syphilitic. 1. Only the father infected before impregnation, twenty-seven cases; arsphenamine treatment; healthy offspring, as shown by observation extending over several years; exceptions were two abortions and an extra-uterine pregnancy in

primiparas. 2. Both parents infected, eleven cases; offspring apparently healthy in all cases; one abortion in a primipara, who had, later, healthy children. 3. Syphilitic mothers treated during pregnancy, seven cases; healthy offspring except for a heredosyphilitic girl baby in a case in which the treatment had been inadequate.

Finally, with regard to individual prophylaxis, Professor Piccardi asserted that arsphenamine treatment constitutes a sure protection against the development of tertiary and quaternary manifestations. During seventeen years, he did not see, among patients treated in this way, any tertiary manifestations or evidence of parasyphilis (quaternary manifestations). He possesses personal statistics of 146 cases (tabes dorsalis, general paralysis and vascular lesions), in thirty-two of which the patients were ignorant of the presence of syphilis; thirteen patients had not taken treatment although they knew they were infected; sixty-nine had been inadequately treated with mercury; twenty-one had been well treated with mercurial preparations; eleven had undergone an inadequate combined mercury and arsphenamine treatment; not a single person thoroughly treated with arsphenamines presented quaternary manifestations.

Consultation Bureau for Persons Considering Marriage

The Milan chapter of the Italian Red Cross Society has organized in Milan a consultation bureau for persons contemplating marriage, after the manner of the bureau recently established in Vienna. The physicians of the institute, aided by specialists and consultants, make the necessary diagnostic observations, having recourse to the most modern clinical methods, including roentgenology and serum tests. Responses to all inquiries will be treated with absolute discretion. Every inquirer will receive a verbal opinion in regard to his state of health, and, more particularly, with regard to his suitableness for marriage. On special request, an opinion in writing will be given. The consultations are gratuitous.

A Medical Circulating Library

At the instance of the Istituto terapeutico romano, a circulating medical library has recently been created, the purpose of which is to place gratuitously in the hands of Italian physicians, even though they are far distant from study centers, the most recent books on medicine published in Italy. The new institution functions in the following manner: The physician selects the book that he desires and remits to the circulating library the price of the book, whereupon the work is forwarded to him promptly. The book may be retained two months or it may be returned sooner to the library, whereupon the deposit is refunded. Many medical publishers have endorsed the plan. It has been brought to the attention of the medical profession by means of an announcement in the *Argus*, which the Istituto terapeutico romano sends gratuitously to all the physicians of Italy.

The Military Sanatorium at Anzio (Rome)

Mussolini dedicated recently a new pavilion for open-air treatment of tuberculosis, which is located in a planted grove of pine-trees, near the Sanatorio antitubercolare militare in Anzio (Rome). The funds were furnished by recovered patients and by the men in the military service. The "capo del governo" was assisted by Dr. Calegari, the director general of the army medical service, and was received by Captain Bocchetti, M.D., the director of the sanatorium, who also delivered a short address.

The International Commission for the Study of Malaria in Sicily

The health section of the League of Nations has appointed an international commission, under the chairmanship of Dr. Lutrario, on which the following countries, in addition to Italy, are represented: the United States (Prof. Claus Shilling), England (Colonel James, M.D.), Germany (Professor Nocht), France, Poland, Holland, Greece, Jugoslavia. The commissioners spent the period September 28-October 8 in Sicily, to complete an inspection on the spread of malaria in the island and to inquire into the best means of combating it. They visited the sanatoriums at Mondello, Trabia, Sallitana and Lentini; the sanitary establishments at Syracuse and at Catania; the institution of the society for the care of patients from the sulphur mines; the antimalarial station of the Rockefeller Foundation in the Plain of Catania, and the ambulatorium of Mois Alcantara. In addition, Professor Manfredi gave an exposition in Palermo of the sanitary conditions, from the standpoint of malaria, prevailing in western Sicily, and, at Catania, Professor Matteis described to the commission the present status of malarial infection in the eastern section of the island.

The Death of Professor Lucatello

Prof. Luigi Lucatello, director of the medical clinic of Padua and rector of the University of Padua, has died suddenly. Lucatello was graduated in Genoa in 1887, and soon afterward went to Germany to study bacteriology. On returning to Italy, he became successively assistant in the Clinica Medica at Genoa, chief physician in the Ospedale Grande of that city, professor of medical pathology in Padua, and, in 1916, on the death of De Giovanni, he was called to the chair of clinical medicine. He published more than a hundred books and pamphlets, among which those of special importance are on typhus (written as a contribution to the Grande Trattato Italiano di Medicina), influenzal pneumonia, the pathogenesis of acetonuria and pseudofevers in endocrinopathy. He was a collaborator and, later, chief editor of the *Gazzetta degli ospedali e delle cliniche*.

RIO DE JANEIRO

(From Our Regular Correspondent)

Oct. 15, 1926.

New Sterility Test

Dr. A. de Assis, an assistant in the Vital Brazil Institute, has published in the *Archivos do Instituto* a method intended to simplify the sterility tests in serums and other biologic products. The Smith tube in use at the Public Health Laboratory, while allowing a simultaneous growth of aerobic and anaerobic organisms, requires rather an extended period of time and may be hard to replace. At the Vital Brazil Institute they are using with much satisfaction a long constricted tube, inside which they place upside down a hemolysis tube which reaches the bottom. Each tube is filled with peptone and glucose broth, 9 parts, and Legroux' formaldehyde serum, 1 part. This method has proved quite successful for growing promptly the usual aerobic and anaerobic organisms. In the case of sugar-fermenting organisms, gas bubbles soon appear in the small inverted tube.

Syphilitic "Typhoid"

Before the Dermatological Society, Dr. F. Rosa described a patient who had syphilitic lesions which healed under local treatment. A few months afterward multiple ulcers appeared with a general rash but not gland enlargement. When the patient was sent to the hospital, the picture was typical of typhoid: fever, prostration, headache, dizziness, vomiting, dyspepsia and a general polymorphic eruption. Serum agglutination of typhoid and paratyphoid bacilli proved negative and the temperature curve did not reveal the usual typhoid lysis. The fever subsided after two injections of iodides.

BERLIN

(From Our Regular Correspondent)

Nov. 20, 1926.

The Incidence of Tuberculosis in Children of Prussia During Recent Years (1914-1923)

Examination of the tuberculosis mortality statistics of Prussia reveals that in the 0-1 age group, which is the most susceptible to tuberculosis, the increased tuberculosis mortality, which began in 1917, still continued in 1923, whereas the remaining age-groups, during the years 1917-1920, showed, in the main, a marked increase (often 100 per cent, and even 200 per cent) over the record for 1914; for 1921 and 1922 there was considerable improvement, but in 1923, which was especially affected by the inflation of the currency, the tuberculosis mortality shot upward again.

The authorities and private organizations are endeavoring to counteract the causes of the increase in tuberculosis among children. Germany suffers, however, from lack of funds. According to a list published by the German Executive Committee for Combating Tuberculosis, there were, in 1914, thirty-two children's tuberculosis sanatoriums, with 2,092 beds; twenty-three children's sanatoriums for surgical tuberculosis, with 1,700 beds, and 120 sanatoriums for scrofulous children and those menaced by tuberculosis, with 9,254 beds. In 1925, certain increases were to be noted: there were eighty-two sanatoriums for pulmonary tuberculosis, with 7,085 beds; thirty-five sanatoriums for surgical tuberculosis, with 1,387 beds, and 201 sanatoriums for scrofulous children and those threatened with tuberculosis, with 20,060 beds.

The Move for the Standardization of Hospital Equipment

At the instance of the Normungsausschuss der deutschen Industrie, a considerable number of standardizing committees have been created in Germany in recent years. These have had to do with the standardization of armatures, plumbing equipment, electrotechnical apparatus, fire-fighting apparatus, and the like.

At present (following the example of the United States), the opinion is that it is not advisable to have in a hospital many different types of equipment; for example, all sorts and shapes of beds (in one hospital nearly a hundred different types were found). It is often difficult to procure spare parts for beds that are no longer manufactured. A standardizing committee has been organized and bears the name Fachnormenausschuss Krankenhaus. The administrations of all public and private institutions for the care of the sick have some kind of representation in the Fachnormenausschuss Krankenhaus. Some realization of the importance of the movement may be gained from the fact that in 1922 there were 4,500 public and private hospitals in Germany (if the eye clinics, the maternity hospitals and the psychopathic institutions are included) with 476,000 beds for the sick. The program of the Fachnormenausschuss Krankenhaus comprises the total needs of hospitals, including furniture, utensils, apparatus, instruments, linen and clothing, laboratory equipment, provisions, disinfectants and detergents, as well as hospital furnishings and elements of construction, such as floor coverings, windows, doors, arrangements for ventilation, illumination, bathroom and laundry equipment, and the construction of portable barracks for the sick, to be used in epidemics. The work is being carried on in the following manner: A fairly large number of groups working independently have been created. These groups are made up of producers and consumers: representatives of the trade in question, experienced hospital physicians of the various specialties, together with expert administrative officials. The work of the various groups consists in preparing specifications for the various types of furnishing and equipment. Before definite specifications are agreed on, various proposals, together with detailed descriptions of equipment, are published in the *Zeitschrift für das gesamte Krankenhauswesen*, to solicit general criticism, and only after adjustment of all differences of opinion will the specifications be incorporated in the Deutsches Normen-Sammelwerk. Thus far, tentative specifications for hospital beds for adults, infants and young children have been published; specifications will soon be proposed for hospital patients' garments, hospital linen, sick-room tables, and wheel beds. The investigations on auto-ambulances and medical instruments are partly completed.

Standard equipment will be introduced mainly with respect to apparatus and furnishings which have reached practically a final stage. For example, standards for the mattresses on hospital beds will not be adopted. The question of whether beds shall have rollers under them, as in America, or shall rest on wooden or rubber blocks or feet, as is more common in Germany, will be left optional. It is not advisable to introduce uniform types of scalpel, forceps and saws, but merely to work against undue multiplication of types and to decide on a reasonable choice with which every surgeon can do successful work.

The Number of Students in German Universities

The total number of German students enrolled in the universities of Germany in the winter semester 1925-1926 was 82,602, which is 13,000 more than were registered during the prewar period and respectively 1 and 4 per cent more than the number matriculated during the two previous semesters. The number of theological students had again decreased as compared with the previous semester, the Protestant students having diminished 4 per cent and the Catholic students 9 per cent. There had been a decrease also in the number of students of chemistry, pharmacy and political economy. The number of medical students, which, during the summer semester, had increased 5 per cent, had not increased further in the winter semester of 1925-1926. The total number of medical students was 6,438. Mining appears to attract much fewer students than formerly, their number having decreased by 18 per cent during the previous summer semester and by a further 4 per cent in the winter semester. Metallurgy had attracted a larger number of students than formerly, and there had been marked increases in the ranks of students devoting themselves to dentistry, veterinary medicine and technical subjects. Philological branches were receiving more attention. There had not been a great increase in the number of women students. There were, however, 6,983 women students as against 6,923 for the previous semester. The number of foreigners studying at German universities had dropped from 8,597 to 7,804, the decrease being most marked in the polytechnic schools.

Marriages

JAMES GAYLEY TOWNSEND, Surg., U. S. Public Health Service, to Miss Clyfton Carolyn Gray of Columbia, S. C., November 22.

ADOLPH BERT QUASSER, Portsmouth, Ohio, to Miss May Bird Cowart of Jacksonville, Fla., November 20.

E. PARISH LOVEJOY, Rocky Ford, Colo., to Miss Evelyn Wildenstein of Raton, N. M., October 30.

ZENAS R. CHAMBERLAIN, Prairie Depot, Ohio, to Mrs. M. J. Roberts of Perrysburg, Ohio, October 24.

JOHN D. KOUCKY, Rochester, Minn., to Miss Margaret Welch of Bismarck, N. D., October 12.

DEWEY R. HEETDERKS to Miss Lorna Pattenson, both of Rochester, Minn., November 4.

HARRY A. COLLINS, Rochester, Minn., to Miss Esther McCarthy, November 15.

MEREDITH F. CAMPBELL to Miss Lillie Rabe, both of New York, September 21.

Deaths

Glentworth Reeve Butler ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1880; member of the American College of Physicians and the American Climatological and Clinical Association; past president of the Kings County Medical Society; for almost fifty years a practitioner and consultant in Brooklyn; on the staffs of the Methodist Episcopal, Long Island College, Kingston Ave., Port Chester (N. Y.) United, Bikur Cholim, Victory, Norwegian, Brooklyn, Coney Island hospitals, and the Broad Street Hospital, New York; served as a lieutenant colonel during the World War; author of the well known work "Diagnostics of Internal Medicine"; died, December 6, aged 70.

Charles Wellman Hitchcock, Detroit; Detroit Medical College, 1885; formerly emeritus professor of neurology and psychiatry, Detroit College of Medicine and Surgery; secretary, Section on Nervous and Mental Diseases of the American Medical Association, from 1918-1921; member of the American College of Physicians; at one time on the staff of the Harper Hospital; aged 68; died in November.

Walter Isaac Baldwin ✠ San Francisco; University of California Medical School, San Francisco, 1911; clinical professor of orthopedic surgery at his alma mater; on the staff of the Shriners' Hospital for Crippled Children; member of the American Orthopedic Association; aged 41; died, November 28, at Santa Barbara.

John A. Stoutenburgh ✠ Washington, D. C.; Georgetown University School of Medicine, Washington, 1891; at one time assistant medical sanitary inspector of the district health department; for twenty-two years on the staff of the National Lutheran Home; aged 56; died, November 29, following a long illness.

John Bliss Brainerd ✠ Middlebury, Vt.; Medical School of Harvard University, Boston, 1884; member of the Massachusetts Medical Society and the New England Otological and Laryngological Society; on the staff of St. Elizabeth's Hospital, Boston, 1895-1924; aged 67; died, November 21.

Charles Blackstone Adams, Venice, Calif.; State University of Iowa College of Medicine, Iowa City, 1897; member of the California Medical Association; aged 53; died, August 28, at St. Catherine's Hospital, Santa Monica, of peritonitis following rupture of the appendix.

John Y. Oldham, Santa Monica, Calif.; Kentucky School of Medicine, Louisville, 1885; member of the California Medical Association; and the Pacific Coast Oto-Ophthalmological Society; aged 60; died, September 19, at the Westlake Hospital, Los Angeles, of gastric ulcer.

Charles M. Drake, Knoxville, Tenn.; Jefferson Medical College of Philadelphia, 1875; member of the Tennessee State Medical Association; aged 69; died, November 20, at the Knoxville General Hospital, as a result of injuries received in an assault by a bandit in July.

James Buchanan Jackson ✠ Hopkinsville, Ky.; University of Tennessee College of Medicine, Memphis, 1881; past president of the Christian County Medical Society; formerly city and county health officer; at one time member of the city council; aged 67; died, October 10.

John Wishart, London, Ont., Canada; Trinity Medical College, Toronto, 1881; M.R.C.S., England, 1877, and F.R.C.S., Edinburgh, 1877; formerly professor of clinical surgery, University of Western Ontario Medical School; died, November 4, following a long illness.

William Joseph O'Leary, Kingston, N. Y.; Columbia University College of Physicians and Surgeons, 1904; member of the Medical Society of the State of New York; on the staff of the Benedictine Hospital; aged 49; died, November 19, of pernicious anemia.

Alexander Brabson Tadlock, Knoxville, Tenn.; Cincinnati College of Medicine and Surgery, 1874; member of the Tennessee State Medical Association; past president of the Knox County Medical Society; aged 90; died, November 16, of arteriosclerosis.

Frank Howard Lord ✠ Plano, Ill.; Rush Medical College, Chicago, 1874; president of the First Bank of Plano; for eight years county coroner and for forty years member of the school board; aged 74; died, December 4, of pyelonephritis.

Samuel Jerome Druskin ✠ New York; Cornell University Medical College, New York, 1902; on the staffs of the Sydenham, Jewish Memorial, Beth David and Jewish Maternity hospitals; aged 49; died, November 23, of angina pectoris.

Oliver Hurd Everett ✠ Worcester, Mass.; Medical School of Harvard University, Boston, 1877; on the staffs of the Memorial and Worcester City hospitals; aged 74; died, November 11, of arteriosclerosis and cerebral hemorrhage.

George Wilbur Graham, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1905; on the staff of St. Michael's Hospital; coroner for the city of Toronto; aged 50; died, November 8, following a long illness.

Luther Peterson Howell ✠ Columbus, Ohio; Baltimore Medical College, 1893; veteran of the Spanish-American and World wars; on the staff of the White Cross Hospital; aged 61; died, November 22, of angina pectoris.

Cleveland B. Hollabaugh, Leslie, Ark.; Vanderbilt University Medical Department, Nashville, 1907; member of the Arkansas Medical Society; served during the World War; aged 44; died, November 9, of heart disease.

Fontaine Lee Carswell, Albany, Ala.; George Washington University Medical School, Washington, D. C., 1906; member of the Medical Association of the State of Alabama; formerly mayor of Albany; aged 54; died, October 1.

Edward Allen Brown ✠ Surg., Lieut. Com., U. S. Navy, Dover, N. J.; George Washington University Medical School, Washington, D. C., 1915; aged 35; was killed, July 10, in the explosion at the Naval Ammunition Depot.

John William Armistead, Greenwood, Miss.; Memphis Hospital Medical College, 1902; member of the Mississippi State Medical Association; formerly county health officer; aged 58; died, October 16, of cerebral hemorrhage.

Edward H. Smith, South Vienna, Ohio; Starling Medical College, Columbus, 1878; member of the Ohio State Medical Association; aged 71; died, October 27, of angina pectoris and general arteriosclerosis.

B. Harry Warren, West Chester, Pa.; Jefferson Medical College of Philadelphia, 1884; member of the Medical Society of the State of Pennsylvania; aged 67; died suddenly, October 11, of heart disease.

Edward F. Norcross, Island Pond, Vt.; University of Vermont College of Medicine, Burlington, 1884; Howard University School of Medicine, Washington, 1884; aged 73; hanged himself, November 12.

Joseph Scroggs, Beaver, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1877; at one time on the staff of the Dixmont (Pa.) Hospital for the Insane; aged 74; died, November 15.

Wilder Dwight ✠ Oakland, Calif.; University of Southern California College of Medicine, Los Angeles, 1896; Spanish-American War veteran; aged 58; died, November 22, following a long illness.

Jesse Lucas Adams ✠ Monroe, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1906; aged 53; died, October 14, at St. Francis Sanatorium, following a long illness.

Nathaniel Mason Marshall ✠ Portland, Maine; Medical School of Maine, Portland, 1879; on the staff of the Maine Eye and Ear Infirmary where he died, November 14, of cholelithiasis, aged 69.

Hollis Wesley Bender, Cedar Rapids, Iowa; St. Louis College of Physicians and Surgeons, 1899; member of the Iowa State Medical Society; aged 55; died, November 6, following a long illness.

David F. Miles, Marion, S. C.; Medical College of the State of South Carolina, Charleston, 1869; formerly member of the state legislature; aged 79; died, November 14, of heart disease.

Bert Isadore Wyatt, Los Angeles; Reliance Medical College, Chicago, 1909; formerly a practitioner in Chicago; aged 42; died recently, of acute articular rheumatism and heart disease.

William Lee Hatcher, Catlettsburg, Ky.; St. Louis College of Physicians and Surgeons, 1903; member of the Kentucky State Medical Association; aged 58; died, November 17, of pneumonia.

William Henry Huckabay, Delhi, La.; College of Physicians and Surgeons, Dallas, 1907; member of the Louisiana State Medical Society; aged 49; died, November 10, of heart disease.

John M. Miller, Cordova, Ala.; Vanderbilt University School of Medicine, Nashville, 1885; member of the Medical Association of the State of Alabama; aged 69; died, October 15.

Robert H. Ward, Fowlkes, Tenn.; University of Arkansas Medical Department, Little Rock, 1912; member of the Tennessee State Medical Association; aged 50; died, September 2.

James Arthur Sinsabaugh, New York; New York Homeopathic Medical College, New York, 1881; aged 68; died, November 20, at the Flower Hospital, of cerebral hemorrhage.

Hubert Nadeau ⊕ Los Angeles; University of Montreal Medical Faculty, Montreal, Que., Canada, 1862; formerly county coroner; aged 88; died, October 11, of arteriosclerosis.

Charles Cooper Rusmisell ⊕ Gassaway, W. Va.; Maryland Medical College, 1905; aged 49; died, November 11, at a hospital in Buckhannon, of pneumonia, following influenza.

Charles Earle Hill ⊕ Portland, Ore.; Willamette University Medical Department, Salem, 1890; served during the World War; aged 59; died, October 25, of heart disease.

Jean Baptiste Clair ⊕ Winsted, Minn.; Baltimore University School of Medicine, 1900; served during the World War; aged 49; died, November 11, following a cholecystectomy.

Russell W. Johnson, Walters, Okla.; St. Louis College of Physicians and Surgeons, 1919; served during the Spanish-American and World wars; aged 47; died, October 28.

William P. McGuire, Winchester, Va.; Medical College of Virginia, Richmond, 1867; member of the Medical Society of Virginia; aged 80; died, November 15, of myocarditis.

James Stretch, Hartford, Conn.; University College of Medicine, Richmond, Va., 1901; aged 66; died, November 19, at his home in Simsbury, following a long illness.

John Ready ⊕ Rochester, N. Y.; Bellevue Hospital Medical College, New York, 1890; aged 61; died, November 15, at the Park Avenue Hospital, of cerebral hemorrhage.

Joseph Solon Dodge, Clermont, Fla.; Medical Department of the University of the City of New York, 1878; aged 78; died, October 21, of diabetes and bronchial asthma.

Jonathan Miller Sinclair, Elizabeth, N. J.; Trinity Medical College, Toronto, Ont., Canada, 1900; aged 53; died, November 28, at Fifth Avenue Hospital, of heart disease.

John Borden Pardoe, San Francisco; McGill University Faculty of Medicine, Montreal, Que., Canada, 1919; aged 32; died, in October, of a self-inflicted bullet wound.

Jabas Fenimore Cooper, Peoria, Ill.; College of Physicians and Surgeons, Indianapolis, 1896; member of the Illinois State Medical Society; aged 73; died, October 23.

Samuel F. Sanders, Holdrege, Neb.; Missouri Medical College, St. Louis, 1872; member of the Nebraska State Medical Association; aged 81; died, September 9.

C. Fremont Cronk, Wichita, Kan.; Rush Medical College, Chicago, 1891; member of the Kansas Medical Society; aged 65; died in October, of chronic nephritis.

L. N. MacKechnie, Vancouver, B. C.; Canada; University of Toronto Faculty of Medicine, Toronto, Ont., 1892; aged 62; died, October 3, at St. Paul's Hospital.

John D. Moore ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1889; aged 61; died, November 5, of cerebral hemorrhage.

Margaret C. Wood Stivers, Paris, Ky.; Cincinnati College of Medicine and Surgery, 1889; aged 66; died, November 2, of diabetes and interstitial nephritis.

Walter Scott Lewis, St. Louis; St. Louis University School of Medicine, 1913; aged 43; died, November 23, at the Christian Hospital, of bronchopneumonia.

James M. Perkins, Denver; Missouri Medical College, St. Louis, 1890; aged 63; died, October 29, at St. Luke's Hospital, of cerebral hemorrhage.

Francis E. Thomason, Chattahoochee, Fla.; Chattanooga Medical College, 1894; aged 56; died, October 23, at the Lee Memorial Hospital, Fort Myers.

Nathan Roswell Barbour, Lockeford, Calif.; Hahnemann Medical College of Philadelphia, 1881; aged 73; died, October 5, at Morristown, N. Y.

Glenn Jesse Proctor, Chicago; Jenner Medical College, Chicago, 1912; aged 45; died, October 24, at Litchfield, Neb., following an appendectomy.

James Walter Warren ⊕ Faribault, Minn.; University of Virginia Department of Medicine, Charlottesville, 1906; aged 45; died, in October.

William Walton Varrell, York Harbor, Maine; Tufts College Medical School, Boston, 1913; aged 44; died, May 28, at a hospital in Boston.

James Adam Crouch ⊕ Bellefourche, S. D.; University of Illinois College of Medicine, 1905; aged 50; died, November 23, of heart disease.

James Hugh Lackey, Ripley, Tenn.; Vanderbilt University Medical Department, Nashville, 1894; aged 56; died, November 16, of pneumonia.

Isaac H. Lamar, Texhoma, Okla.; Eclectic Medical Institute, Cincinnati, 1886; aged 64; died, November 26, of cerebral hemorrhage.

George Herman Hammerbacher, Baltimore; University of Maryland School of Medicine, 1894; aged 57; died, October 3, of heart disease.

Charles Schram ⊕ New York; Medical School of Harvard University, Boston, 1886; aged 65; died, November 27, of heart disease.

Frank M. Pitts, Hubbard, Texas; Jefferson Medical College of Philadelphia, 1881; aged 67; died, November 17, of heart disease.

Robert W. K. White, Hamilton, Ont., Canada; University of Toronto Faculty of Medicine, 1898; died, May 27, at Niagara Falls.

Alford Elihu W. Yale ⊕ Burbank, Calif.; University of Michigan Medical School, Ann Arbor, 1904; aged 47; died, September 13.

Isaac N. McBride, Jeffersonville, Ky.; University of Louisville School of Medicine, 1891; aged 69; died suddenly, November 13.

John H. Mattern, Cadiz, Ohio; Ohio Medical University, Columbus, 1904; aged 51; died, November 18, of cerebral hemorrhage.

John Van Dorn Young ⊕ New York; Medical Department of Columbia College, New York, 1888; aged 62; died, October 25.

Robert Mason, Exeter, N. H.; Columbia University College of Physicians and Surgeons, New York, 1870; aged 79; died, October 15.

Henry H. Beverly, Austin, Texas; Medical Department University of Louisiana, New Orleans, 1883; aged 72; died, August 24.

E. Joseph McEntire, Erie, Ill.; Rush Medical College, Chicago, 1895; aged 52; died, November 24, of cerebral hemorrhage.

John Harmon La Grange, Bunker Hill, Ill.; Albany (N. Y.) Medical College, 1871; aged 70; died, October 20, of chronic nephritis.

James H. Smith, Trimble, Tenn.; Memphis Hospital Medical College, 1882; aged 72; died, November 4, of heart disease.

Myron Lucius Cooley ⊕ Waterbury, Conn.; University of Buffalo Department of Medicine, 1886; aged 67; died, October 28.

James P. Mackey, Sardis, Tenn.; University of Tennessee College of Medicine, Memphis, 1894; aged 64; died, September 7.

James H. Parkinson ⊕ Sacramento, Calif.; L.R.C.S., Ireland, 1879; L.K.Q.C.P., Ireland, 1880; aged 67; died, July 22.

August Henry Ritter, Brooklyn; Long Island College Hospital, Brooklyn, 1883; died, November 22, of heart disease.

James Erastus Jewell, Moran, Kan.; College of Physicians and Surgeons, Baltimore, 1881; aged 80; died, August 27.

Howard Lee Green, Bridgeport, Pa.; Jefferson Medical College of Philadelphia, 1897; aged 61; died, October 9.

Frederick Marvin Jones, Gary, Ind.; Louisville (Ky.) Medical College, 1894; aged 55; died suddenly, November 5.

Warren Riley, Reno, Ohio; Columbus Medical College 1883; Civil War veteran; aged 84; died, September 1.

Belle B. Murphy, Chicago; Jenner Medical College, 1910; aged 55; died, November 7, of lobar pneumonia.

Edmond Joseph O'Donnell ⊕ Albany, N. Y.; Albany Medical College, 1911; aged 51; died in October.

Harry A. Snow ⊕ Milo, Maine; Baltimore Medical College, 1893; aged 59; died, April 11, of pericarditis.

John A. Stroburg, Austin, Texas; Rush Medical College Chicago, 1893; aged 68; died, October 22.

John L. Weaver, Baxley, Ga.; Atlanta Medical College, 1877; aged 74; died, October 16.

Walter F. Wolford, Allen, Texas (nongraduate); aged 79; died in October, at McKinney.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

H. P. CLEARWATER—QUACK

A Medical Mail-Order Fakery in Hallowell, Maine

In the village of Hallowell, Maine, there has been conducted for some years a piece of mail-order quackery by one H. P. Clearwater, a man without medical training. Clearwater has a somewhat extensive line of nostrums, some of which are sold exclusively on the mail-order plan, while, in the sale of others, Clearwater splits profits with drug stores. His line comprises:

"CLEARWATER'S RHEUMATIC TREATMENT" (Mail-order).
"JOINT EASE"—For rheumatism (A drug store product).
"VITOLA"—To increase nerve force, vitality and power.
"CARDEX"—For the heart.
"KIDNEY AND BLADDER REMEDY."
"DIATONE"—For "stomach troubles."
"VENOX"—For piles.
"KAMNEX"—For pain.
"COLD AND GRIPPE TABLETS."
"SALATOX"—For constipation.
"LAXATIVE LIVER PILLS."
"LANEX OINTMENT"—The "new skin treatment."

Clearwater's methods of doing business are not original—in fact, a study of mail-order quackery convinces one that originality in this field is unnecessary. Those who would treat themselves with medicines about which they know nothing, sent out by persons about whom they know less, are easily caught by the conventional follow-ups that are the stock-in-trade of the medical mail-order faker.

To make his contact it is necessary, of course, for Clearwater to advertise in those cheap magazines that act as a "go-between" in bringing the mail-order quack and his victim together. Today Clearwater usually advertises his "Rheumatic Treatment." He has probably found that he can get these advertisements accepted more easily than those, for instance, of his "cure" for heart disease, his "kidney and bladder remedy," or his "pile cure." Whoever answers one of his "rheumatism cure" advertisements, however, receives, before Clearwater gets through with him, persuasive advertising urging him to buy one or more of the other nostrums that this quack has for sale.

Some years ago Clearwater was running, as side lines, two other mail-order fakes called, respectively, the "Heart Cure Company" and the "Associated Specialists." The form letters that were sent out to those who answered these advertisements were signed, "Directing Specialist Clearwater." The "scare stuff" that was sent out to persons who supposedly had heart disease could be counted on to make a victim willing to sell all that he had in order to receive the "cures" that were offered.

Under the name of the Heart Cure Company, Clearwater sold what he called "Dr. Fuller's Heart and Nerve Tablets," which contained, in addition to a small amount of cascara sagrada, such potent drugs as digitalis, nitroglycerin, strychnine sulphate and hyocyamus. Of course, the purchasers were given no hint as to the presence of these powerful ingredients.

Those who wrote to the Heart Cure Company received, in due course, the regular series of follow-up letters. If no purchase was made, the victim, some time later, received a letter from the "Associated Specialists" offering a "free trial treatment."

The Heart Cure Company and the Associated Specialists do not seem to have been functioning under those names for some time. Clearwater does, however, seem to have adopted another trade name, "Pope Laboratories," under which he has sold several of his nostrums.

Clearwater's mail-order activities at the present time are mainly with his alleged cure for rheumatism. Those who answer his advertisements receive a typical form-letter in imitation typewriting and a cheaply prepared booklet, described as "A Treatise on Rheumatism." The inside front cover of the booklet contains a full-page picture of H. P. Clearwater; the letterhead also bears a picture of Clearwater as does, too, a four-page circular that comes with the "treatise." In fact, one gets the impression that H. P. Clearwater, like the milkmaid of the nursery rhyme, may think that his face is his fortune.

Should the recipient send in the $5 necessary for a "treatment," he gets another form-letter (the first page of which bears a picture of Clearwater) and also gets some additional advertising matter dealing with Clearwater's other nostrums. A day or two after the package appears, the purchaser gets an envelope in which there is a sheet of social stationery, bearing the name, "H. P. Clearwater, Ph.D.," and the brief statement:

"My dear Friend: I have just had some new photographs finished and am thinking perhaps you may care to have one. With my best wishes always, H. P. C."

What actually comes in the envelope is not a photograph but a half-tone reproduction of a photograph—showing Mr. Clearwater in all the pristine glory of a white waistcoat and a Masonic emblem. The picture is identical with that which adorns the stationery and other printed matter.

In the form-letter that comes to the victim who has purchased, Clearwater adds a postscript asking whether the recipient may not be interested in taking the local agency for the sale of his various remedies, and offering a very "attractive proposition." If the person who receives this offer writes for further information, back comes another form-letter from Clearwater (with the inevitable picture on the first sheet) which explains how easy it is to make money selling the Clearwater remedies. There is a complete set of advertising matter dealing with the various nostrums and also an order blank, together with a sheet containing "Special Confidential" prices. From this price sheet it seems that those who take the agency for Clearwater's stuff make a profit of $24.50 on every $47 worth that is sold.

FELL DEAD IN MOTHER'S ARMS
DROPS DEAD WHILE TALKING IN A CAFE
PRICE ONE CENT
BRIG. GEN. RICE DROPS DEAD OF HEART FAILURE
Gallant Soldier Victim of Fever Caught in Philippines
DIES IN ARMS OF HIS WIFE
DROPPED DEAD ON STREET.
WALKING WITH DEATH!
YOU AT THIS MOMENT
IT DOES MEAN YOU!!!
DEAD IN MASSAGE PARLOR

Reproduction (greatly reduced) of a small portion of the "scare stuff" used by Clearwater in connection with his "heart cure" quackery.

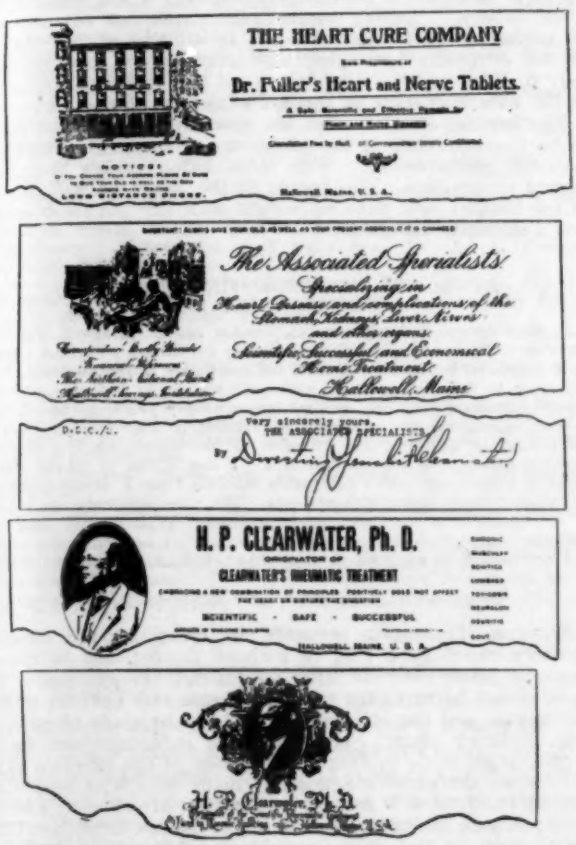
One "complete 45 days treatment" (price $5) of Clearwater's rheumatism nostrum was ordered, and the material turned over to the A. M. A. Chemical Laboratory. The Laboratory reported as follows:

LABORATORY REPORT

"Two original packages of 'Clearwater's Scientific Rheumatic Treatment' (H. P. Clearwater, Ph.D., Hallowell, Maine) was submitted to the A. M. A. Chemical Laboratory for

examination. Each box contained 45 red coated tablets and a small package of white tablets.

"Red Tablets.—These were coated with what, qualitative tests indicated, was essentially calcium carbonate (chalk), starch, sugar and a dye, eosin. The medicinal portion of the tablet had an average weight of 0.5 gm. (7½ grains). Qualitative tests indicated sodium, calcium, carbonate, iodide, emodin-bearing (laxative) drug and excipients. Microscopic examination indicated that the laxative drug was cascara sagrada. The calcium was in the form of calcium carbonate.



Greatly reduced reproduction of some of the various letterheads that have been used by Clearwater.

The aqueous extract was decidedly alkaline to phenolphthalein. Alkaloids, coal tar products (such as salicylates, amidopyrine, etc.), arsenic compounds, citrates, acetates, nitrates were not found. The ash from the medicinal portion was 66 per cent. Quantitative estimations on the medicinal portion of the tablets yielded the following:

"Loss at 100 C. (moisture)	13.5 per cent
"Water insoluble material	13.7 per cent
"Sodium (Na^+)	24.5 per cent
"Carbonate ($CO_3^=$)	29.4 per cent
"Iodide (I^-)	3.1 per cent
"Sugar, emodin-bearing extract, etc., by difference	15.8 per cent.

"From the foregoing it may be concluded that the tablets contain essentially 3.7 per cent sodium iodide and 64 per cent of sodium carbonate U. S. P. This is equivalent to 0.02 gram (⅓₀ grain) sodium iodide and 0.32 gram (5 grains) of sodium carbonate in each tablet.

"White Tablets.—The white tablets are labeled as laxative. Qualitative tests indicated that the tablets contain an emodin-bearing (laxative) drug, while microscopic examination also indicated the presence of gentian."

From this, then, it seems that "Clearwater's Scientific Treatment" for rheumatism consists of two kinds of laxative tablets, one of which has in addition:

Sodium iodide	⅓ grain
Sodium carbonate	5 grains.

What the public is pleased to call "rheumatism" is a splendid field for the nostrum maker and the mail-order quack. Any ill-defined pain almost anywhere in the body, but especially in the muscles or the joints, is commonly dubbed "rheumatism." Such pains, as a rule, are not long continued and tend to disappear spontaneously, especially if elimination is favored by a more rational diet or the occasional use of a laxative. Let a person with such ill-defined symptoms take an alleged cure for rheumatism and when, in a few days' time, he finds himself free from discomfort he immediately jumps to the conclusion that what he has been taking is responsible for his improved condition.

The altogether inadequate dosage of sodium iodide in the Clearwater nostrum, and the equally inadequate amount of the alkaline sodium carbonate, would be practically valueless in any cases of true arthritis. In those few cases in which the Clearwater "treatment" results in greater comfort to the patient, the results would, undoubtedly, be due to the laxative action of the pills and to following the suggestion that plenty of water be consumed.

Correspondence

"SURGICAL MOTION PICTURES"

To the Editor:—The reason surgical motion pictures are not more used is that they are not properly made, and in my opinion the reason they are not produced in a workmanlike manner and have thus fallen into innocuous desuetude is that they are not adequately paid for in the making. There is no better method today of showing surgical technic to a large audience than by motion pictures when accompanied by animated diagrams prepared by a competent artist, as were put out during the war by the late Col. W. O. Owen, Paul Terry of Æsop fable fame, Col. L. H. Jones, myself, and many others. Talking motion pictures of surgical operations —and they may be easily colored ones as well—such as were shown last spring by Gaumont in Paris are here to stay, and the earlier the Committee on Scientific Exhibit of the American Medical Association gets hold of some of these films for demonstration purposes, so much the better for postgraduate study and research work here in America.

The November, 1926, issue of the *Annals of the American Academy of Political and Social Science* is entirely devoted to "The Motion Picture in Its Economic and Social Aspects," and the article therein by Dr. Joseph Franklin Montague, of the Bellevue Medical College Clinic of New York City, is well worth reading.

HENRY W. CATTELL, M.D., Philadelphia.

A USEFUL SIGN IN THE DIAGNOSIS OF URETERAL STRICTURE AND ITS SEQUELAE

To the Editor:—During the last three years I have found that a useful sign in the diagnosis of ureteral stricture and its sequelae is the presence of a point of tendernes, elicited on pressure with the index or middle finger in a definitely localized and circumscribed area about 2 cm. to the side of the umbilicus. This "point" has been present in about 200 patients, each being subsequently investigated by a competent urologist, and in the majority pyelograms were made. Five in this series were found to have normal ureters and no evident pathologic condition in the urogenital tract. In making this examination, gentle pressure should be used and the finger nails should be trimmed. The end of the finger should be used in making pressure. Occasionally the reaction is slightly delayed, but if a pathologic condition is present the tenderness will be felt. In an article by Harvey G. Beck and Albert E. Goldstein (*Am. J. M. Sc.* **171**:796 [June] 1926) the authors called attention to the value of this diagnostic sign as

well as to the advantage it possesses over that of Morris in not leading to confusion with McBurney's point when the right side is involved. Further use of this sign by the profession, with careful and accurate tabulation of the results, will in time establish either the value or worthlessness of it. It has been of invaluable assistance to me and to my colleagues and we no longer hesitate, but refer a patient exhibiting this sign to a competent urologist for a complete examination. Ureteral strictures are being more frequently recognized by the profession, and the difficulty in their diagnosis has been one of the causes of their supposed rarity. My object in calling attention to this sign after using it for three years is my desire to have it generally observed in order to determine whether it will be of the same value to others.

JOHN E. LEGGE, M.D., Baltimore.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF LYMPHATIC LEUKEMIA

To the Editor:—I am treating a patient suffering from lymphatic leukemia. He is about 75 years old. He first noticed swelling of the cervical glands about a year ago. Since then other glands have become involved. I gave him solution of potassium arsenite (Fowler's solution) in increasing doses. At times the swelling goes down to almost nothing; at times it is tremendous. There is complete anorexia. Would you kindly inform me whether radium would be of any appreciable value? Our local radiologist is very doubtful, and practically advised against the use of radium. Would you also tell me whether intravenous injections of sulpharsphenamine or similar preparations would give better results than the old fashioned administration of Fowler's solution? Is there anything at all that would mitigate the process? Is roentgen-ray treatment of any value whatever? Would any form of physiotherapy, such as diathermy, play any valuable part in the treatment? Please omit name.

M.D., Hartford, Conn.

ANSWER.—Radium has been used with reported good effect in many cases of leukemia. While the most striking results were obtained in the myelogenous type, favorable effect was noted in the chronic lymphatic type, to which it is assumed that the patient referred to belongs.

Favorable results have also been noted after treatment by the roentgen ray. Apparently fewer patients are refractory to radium than to the roentgen ray. If this patient does not improve on roentgen-ray treatment, radium may be tried. Preparations of arsphenamine have been used, with reported improvement, but it is difficult to state whether this drug is more effective than arsenic in other forms.

Marked reduction in the number of white cells has been noted following treatment both by radium and by the roentgen ray, as well as after treatment by benzene and following acute infections; but so far the treatment of leukemia is palliative only, and does not result in cure. In chronic forms of leukemia, the production of long remissions adds to the comfort of the patient and is well worth while. Likewise when the treatment of such symptoms as pain by diathermy gives relief it should be used, but with the understanding that so far as is known it is not curative.

BAR-CHE-CO.

To the Editor:—Find enclosed some literature from a company that floods this country every few weeks with their literature. It is said that their products are extensively used.

J. A. BURNETT, M.D., Oklahoma.

ANSWER.—The "literature" sent consists of advertising matter emanating from the Barksdale Chemical Company, successors to The Webster-Warnock Chemical Company, Memphis, Tenn. There is a price list presenting the usual pills, elixirs, tinctures, etc., and the inevitable assortment of irrational shotgun "specialties" marketed under noninforming or therapeutically suggestive names; also a booklet and form letter featuring "Bar-Che-Co," "the mighty aphrodisiac," recommended for "its therapeutical value, in the treatment of Neurasthenic impotence."

In the advertising booklet for Bar-Che-Co, the preparation is said to contain: "Yohombine [Yohimbine?] hydrochloride," 1/12 Gr., "Extract Nux Vomica," 1/6 Gr., "Lecithin," 1/8 Gr., "Pituitary Substance," 1/24 Gr., "Thyroid Substance," 1/12 Gr., "Suprerenal [Suprarenal?] Substance," 1/5 Gr. This is a typical shotgun mixture, and is open to all the objections that have been made to this discredited style of therapy. The combination of gland preparations contained in Bar-Che-Co is similar to others which have been rejected by the Council on Pharmacy and Chemistry. There is no acceptable evidence that such a combination will, as the advertising claims, "help to maintain a harmonious balance to the whole endocrine system." During recent years little has been written of yohimbine as an aphrodisiac. It is believed that the use of the drug has been generally abandoned (THE JOURNAL, July 6, 1918, p. 60). Physicians no longer attach any value to the administration of small doses of lecithin.

The booklet is written in the slovenly English that seems to be characteristic of the promoters of many glandular and "sexual" preparations. The form letter makes the usual appeal to cupidity. The appeal of the letter, as well as that of the booklet, will have no weight with any but the thoughtless and easily influenced.

HYDROGEN PEROXIDE FOR CLEANSING EXTERNAL EAR

To the Editor:—In THE JOURNAL, October 16, Dr. Mearle C. Fox calls attention to the use of cotton dental rolls for ear drains. The idea appears to be excellent, but in the course of his description of the cleansing of the ear prior to their insertion he mentions approvingly hydrogen peroxide. I seem to remember in my medical course twenty years ago having been warned against the use of hydrogen peroxide in any confined space on the ground of spreading the infection; in the middle ear, for instance, carrying infection to the mastoid cells. I saw a case of buccal abscess about two years ago which apparently resulted from a dentist irrigating an infected tooth socket with peroxide. The only legitimate use I know of for peroxide in ear work is in loosening cerumen, and should be used then only if we are reasonably certain that no perforation exists. If I am correct in my ideas on the subject, I think it should be brought to the attention of your readers.

E. C. MCCULLOCH, M.D., Port Ivory, Staten Island, N. Y.

ANSWER.—Hydrogen peroxide in cleansing the external auditory canal as a rule is without danger, but in certain cases an acute external otitis due to *Bacillus pyocyaneus* can be of direct harm to the patient because this bacillus thrives on oxygen, and the infection is liable to be made worse with any oxidizing agent. Therefore, the indiscriminate use of hydrogen peroxide in cases of infection of the external canal until after the exact diagnosis is made may lead to trouble. Of course, if there is merely a collection of secretion without a deep-seated infection, it is all right. When there is a large perforation of the drum membrane, the use of hydrogen peroxide is not likely to cause trouble; but when it is used in cases of small perforation the peroxide may get into the middle ear, and the liberation of large quantities of oxygen not having good vent through the small perforation may cause distention and trouble in the middle ear.

TREATMENT OF OBESITY WITH THYROID GLAND

To the Editor:—Kindly discuss in detail in your columns the modern treatment of obesity by use of thyroid gland as to dosage, probable dangerous factors attendant thereto, signs and symptoms of too prolonged or too strenuous treatment, and any other points of interest concerning this matter. Please omit name.

M.D., Detroit.

ANSWER.—Reduction of weight should not be undertaken by means of thyroid alone. Dietary procedures carefully controlled form the basis of all scientific and rational reduction methods. In some instances, when diet alone will not reduce beyond a certain level, thyroid gland may be used. The dosage varies considerably with individual patients; also, it must be borne in mind that not all commercial products are standardized on the same basis. When prescribing the drug physicians should make certain that they will be supplied with the U. S. P. product (Thyroid U. S. P.) which is required to be of standard composition (0.2 per cent iodine). The safest way is to start with small doses of about 1 grain of thyroid U. S. P. daily, watching the pulse and the nervous system, particularly for signs of overstimulation. Too rapid loss of weight, the development of tachycardia, nervousness, restlessness, sleeplessness and tremor indicate that too much thyroid is being given. Under proper observation, thyroid in considerably larger doses than 1 grain may be used with perfect safety, but thyroid is always a double edged sword, and must be used with caution.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11-14. Chairman, Dr. S. W. Welch, Montgomery.

ARIZONA: Phoenix, Jan. 4. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

CALIFORNIA: Los Angeles, Jan. 31 to Feb. 3. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

CONNECTICUT: New Haven, Feb. 12. State Board of Healing Arts (prerequisite to examination). Sec., Dr. Charles M. Bakewell, Box 1895, Yale Station, New Haven.

DISTRICT OF COLUMBIA: Jan. 11. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye St., N. W. Washington.

HAWAII: Honolulu, Jan. 10-13. Sec., Dr. A. L. Davis, 1254 Emma St., Honolulu.

ILLINOIS: Chicago, Jan. 11-13. Supt. of Registration, Mr. V. C. Michels, Springfield.

INDIANA: Indianapolis, Jan. 11. Sec., Dr. William T. Gott, Crawfordsville.

KANSAS: Topeka, Feb. 8. Sec., Dr. Albert S. Ross, Sabetha.

MINNESOTA: Minneapolis, Jan. 4-6. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II, Feb. 9-11. All applications should be in on or before Jan. 9. Sec., Dr. John S. Rodman, 1600 Walnut Street, Philadelphia.

NORTH DAKOTA: Grand Forks, Jan. 4-7. Sec., Dr. G. M. Williamson, Grand Forks.

OREGON: Portland, Jan. 4-6. Sec., Dr. M. K. Hall, 816 Pittock Block, Portland.

PENNSYLVANIA: Philadelphia, Jan. 25-29. Mr. C. D. Koch, Director, Professional Education Bureau, Harrisburg.

RHODE ISLAND: Providence, Jan. 6-7. Sec., Dr. B. U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 18. Director, Dr. H. R. Kenaston, Bonesteel.

UTAH: Salt Lake City, Jan. 4-5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, Feb. 8-10. Sec., Dr. W. Scott Nay, Underhill.

WISCONSIN: Madison, Jan. 11. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.

WYOMING: Cheyenne, Feb. 7-8. Sec., Dr. G. M. Anderson, Cheyenne.

South Dakota July Examination

Dr. H. R. Kenaston, director, medical licensure, South Dakota Department of Medical Examiners, reports the oral, written and practical examination held at Custer, July 20-21, 1926. The examination covered 15 subjects and included 100 questions. An average of 75 per cent was required to pass. Nine candidates were examined, all of whom passed. Three candidates were licensed by reciprocity, and 1 by endorsement of his credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Creighton University College of Medicine		(1907)	83.1
Loyola University School of Medicine		(1921)	87.1, (1924) 86.7
University of Nebraska College of Medicine		(1925)	90.9
University of Minnesota Medical School		(1924)	90.4
Chicago College of Medicine and Surgery		(1909)	79.3
Medical College of Indiana		(1892)	83
Rush Medical College		(1924)	95.9, (1926) 88.7

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Minnesota Medical School		(1915), (1923)	Minnesota
Creighton University College of Medicine		(1895)	Kansas

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Rush Medical College		(1925)	N. B. M. Ex.

Montana October Examination

Dr. S. A. Cooney, secretary of the Board of Medical Examiners of Montana, reports the written examination held at Helena, Oct. 4-6, 1926. The examination covered 10 subjects and included 50 questions. An average of 75 per cent was required to pass. Nine candidates were examined, all of whom passed. Four candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine		(1926)	84.1
University of Illinois College of Medicine		(1926)	81.6
Detroit College of Medicine and Surgery		(1926)*	84.8
University of Minnesota Medical School		(1923)	80.8
St. Louis University School of Medicine		(1925)	83.7
Creighton University College of Medicine		(1926)	86.1
University of Nebraska College of Medicine		(1926)	84.4, 85.1
University of Pennsylvania School of Medicine		(1925)	84.9

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Drake University College of Medicine, Des Moines		(1910)	Iowa
State University of Iowa College of Medicine		(1924)	Iowa
University of Kansas School of Medicine		(1923)	Kansas
University of Nebraska College of Medicine		(1925)	Nebraska

* This candidate has finished his medical course and will receive his M.D. degree on completion of a year's internship in a hospital.

Illinois June Examination

Mr. V. C. Michels, superintendent of registration of the Illinois Department of Registration and Education, reports the written and practical examination held at Chicago, June 22-24, 1926. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Of the 238 candidates examined, 219 passed and 19 failed. Ten candidates were licensed by reciprocity, and 1 by endorsement of his credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1924)	85
Chicago Medical School		(1926)	75, 75, 76, 77, 80, 83, 84, 84, 85,* 85, 82, 82, 82, 82, 82, 86, 86, 87,* 87, 87
Loyola University School of Med.		(1926)	75, 76, 79, 79, 80, 80, 81, 82, 82, 82, 83, 83, 83, 83, 83, 84, 85, 85, 85, 85, 85, 85, 85, 85, 86, 86, 87, 87, 87, 87, 89
Northwestern University Medical School		(1926)	77, 78, 78, 79, 79, 80, 80, 80, 80, 81, 81, 81, 81, 82, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 85, 86, 86, 86, 86, 86, 87, 87, 87, 88, 88, 88
Rush Medical College	(1896) 86, (1925) 83, 85,	(1926)	76, 81, 81, 82, 82, 82, 83, 83, 83, 84, 84, 84, 85, 85, 85, 85, 86, 86, 86, 87, 88, 88, 88, 88, 90, 91
University of Illinois College of Medicine		(1926)	78, 80, 81, 81, 81, 82, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 87,* 87, 87, 87, 87, 88, 88, 88, 88, 89, 89, 89, 89, 89
Indiana University Medical School		(1925)	84
State University of Iowa College of Medicine		(1925)	89
Harvard University		(1925)	81, 86
Tufts College Medical School		(1924)	78
St. Louis University School of Medicine		(1925)	77, 77, 77, 78, 80, 80, 81, 83, 87, 87
Washington University School of Medicine		(1925)	82,82
University of Nebraska School of Medicine		(1925)	75
Eclectic Medical College, Cincinnati		(1925)	78, 82, 83, 85, 86
Jefferson Medical College of Philadelphia		(1925)	81
University of Pennsylvania School of Medicine		(1925)	83, 89
University of the South Medical Department		(1908)	79
Marquette University School of Medicine		(1926)	78, 87
University of Naples, Italy		(1915)†	75
University of Petrograd, Russia		(1917)†	78

College	FAILED	Year Grad.	Per Cent
American Medical Missionary College		(1903)	81‡
Chicago College of Medicine and Surgery		(1916)	65
Chicago Medical School		(1925)	72, (1926) 59, 66, 69, 69
Loyola University School of Medicine		(1916)	73, (1926) 75‡
Northwestern University Medical School		(1913)	61
The General Medical College		(1923)	72
University of Louisville School of Medicine		(1901)	68
Barnes Medical College		(1904)	44
Meharry Medical College		(1892)	72, (1924) 71
University of Greifswald, Germany		(1921)†	61
University of Leipzig, Germany		(1921)†	69
University of Naples, Italy		(1920)†	70, (1921)† 60

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Johns Hopkins University Medical Department		(1921)	Maryland
University of Michigan Medical School		(1924)	Michigan
St. Louis University School of Medicine		(1919)	Iowa
Miami Medical College, Cincinnati		(1892)	Ohio
Meharry Medical College		(1912)	Arkansas, (1916) Texas
University of Texas Department of Medicine		(1918)	Texas
Milwaukee Medical College		(1911)	Wisconsin
Eclectic Medical College, Cincinnati		(1919)	Ohio
University of Toronto Faculty of Medicine		(1923)	Penna.

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Rush Medical College		(1925)	N. B. M. Ex.

* These candidates have completed their medical courses, but their diplomas and licenses are being withheld pending completion of a year's internship in a hospital.

† Verification of graduation in process.

‡ Failed in clinical examination only.

Book Notices

OUTLINES OF COMPARATIVE ANATOMY OF VERTEBRATES. By J. S. Kingsley. Third edition. Cloth. Price, $4. Pp. 470, with 435 illustrations. Philadelphia: P. Blakiston's Son & Company, 1926.

This book needs no introduction to any American interested in anatomy. It has commended itself to American students since the publication of the first edition because of the interesting way in which the fundamental principles of vertebrate structure are set forth in the text, because of the clearness with which these principles are expressed in the illustrations and diagrams, and because of the treatment of the subject from the embryologic standpoint as long ago seen by Agassiz to be the only way in which comparative anatomy could be intelligently studied. The present edition has offered opportunity for some revision, especially in the sections dealing with the skeleton, muscular system, brain and circulation. A number of illustrations have been added, and the diagrams have been in some instances redrawn. These diagrams have proved of much help to students in their effort to comprehend the general plan of structure of vertebrate animals and have been made into wall charts in some of our laboratories of anatomy. The tabulation of the bibliography has been brought up to date. The definitions of systematic names and the lists of Latin and Greek roots of technical words are features that have greatly increased the value of the book to students of anatomy.

AURICULAR FIBRILLATION. By J. G. Emanuel, B.Sc., M.D., F.R.C.P., Physician to the Queen's Hospital, Birmingham. The Ingleby Lectures delivered at the University of Birmingham May 6th and May 13th, 1925. Cloth. Price, 3/6 net. Pp. 31, with 16 illustrations. Birmingham: Cornish Brothers, Ltd., 1926.

In these lectures Emanuel is less concerned with theories than with facts. These facts he has learned by observation and study at the bedside and by the help of the polygraph and electrocardiograph. He is inclined to be positive in his statements. Apparently, at times, the opportunity of saying a thing in a striking, epigrammatic way leads him to speak too dogmatically or too broadly. Thus, "Auricular fibrillation is not an organic disease; it is a functional disease"; or, "Auricular fibrillation is not the result of cardiac exhaustion, it is a condition that leads to cardiac exhaustion." He believes that toxins may cause not alone the rapid, irregular pulse of fibrillation but, paradoxical as it may seem, that they may slow the pulse in this condition much as does digitalis. He regards vomiting as an occasional manifestation of the disease. If such is the case, more, rather than less, digitalis may be called for. Emanuel is a firm believer in the efficacy of quinidine sulphate. "There is no question as to the power of quinidine sulphate to change auricular fibrillation to sinus rhythm in the great majority of cases." The force of this optimistic declaration is somewhat modified when it is learned that he uses the drug only in patients who, when in bed, show no orthopnea, no edema, albuminuria or enlargement of the liver. In other words, he carefully selects his cases. The only suitable ones are the mild ones or those that have already improved under rest and digitalis. He does not tell us for how long a time the restored sinus rhythm persists or the degree of subjective and objective improvement that accompanies it. The book is readable and always interesting. It is of service to the practitioner rather than to the medical student.

DIE NEPHRITIDEN UND NICHTENTZÜNDLICHEN NIERENERKRANKUNGEN: Ihre Diagnostik und Therapie. Von Prof. Dr. H. Strauss. Fourth edition. Paper. Price, 21 marks. Pp. 400, with 12 illustrations. Berlin: Urban & Schwarzenberg, 1926.

This is a rather complete survey of the modern conceptions in the pathology and diagnosis of the medical kidney diseases and their treatment. On account of the complexity of the renal functions and their intimate correlation with the entire system, any single method of examination will furnish only incomplete information. All the available tests of the renal function are thoroughly discussed and an evaluation of the information imparted is given in each instance. The blood chemistry, which is of such importance in the discrimination of renal disturbances, is dealt with in a masterly way, as might be expected from an author who is virtually the founder of this part of renal investigation. Pathologic conditions of the kidneys are extensively discussed in the chapter dealing with the concomitant changes in the cardiovascular system, with hydropic conditions and with uremia, and the ocular changes. In the classification of the renal diseases, the Volhard-Fahr classification is used as the basic principle. In the therapeutic part the author distinguishes between causal therapy and the attention to be given to the sequelae of the original disorder. Particular stress is laid on the adjustment of the treatment to the peculiarity of each case as ascertained by the qualifying diagnosis. The reader is warned against the discriminate administration of traditional "cures." The dietetic regimen is considered the foremost item, and tables are furnished giving the caloric value and the percentage of chlorides of the various foodstuffs.

PROTOZOOLOGY: A Manual for Medical Men, Veterinarians and Zoologists. In two volumes. By C. M. Wenyon, C.M.G., C.B.E., M.B., Director-in-Chief of the Wellcome Bureau of Scientific Research. Cloth. Price, $25 a set. Pp. 1563, with 585 illustrations. New York: William Wood & Company, 1926.

Although this treatise gives a comprehensive treatment of the entire field of protozoology, it is designed especially with medical and veterinary interests in mind. All the parasitic forms are considered in detail, but by far the greatest emphasis is placed on those species which infect man and animals. The free-living species are discussed briefly with the exception of the coprozoic forms which, because they are sometimes confused with true parasites, require a more extended exposition.

There are six parts. The first, a general description of the protozoa, consists of 152 pages and deals with such questions as organization, division, syngamy, endomixis, life cycles, physiology, immunity and action of therapeutic drugs. One of the few criticisms that can be made, and this is a matter of opinion, is that this section is entirely too brief in relation to the other sections of the book. Thus, the section on immunity, which is of obvious importance to medicine, is general and incomplete. For example, it contains no mention of the fundamental work of Ehrlich and his associates and of many French investigators on the production of crises and the mechanism of relapses in the trypanosome infections. Similarly, it would seem that genetics, which is assuming more and more importance to medical workers, is only inadequately covered by references in this and other portions of the book. The second part, which is a systematic description of the protozoa, with especial reference to the parasitic and coprozoic forms, is by far the largest section of the book, covering 1,077 pages, and represents the most accurate and encyclopedic account of these forms that has been published to date. The entire treatment is marked by a conservatism and a constructive criticism, born of the author's enormous first hand experience with most of the forms. Throughout the author has struck an admirable balance among the various topics considered. Thus, for example, the important but rather tiresome questions of nomenclature are reduced to a minimum. The descriptions of the parasites of man are very accurate and include extensive discussions of the morphology, life history, cultivation, pathology, symptomatology, diagnosis and action of drugs on the species of each group. No attempt has been made, however, to discuss various public health questions, such as prevention and control. Following the accounts of those forms whose existence the author feels is without question, there is always an account of doubtful species, so that, if the reader does not agree with the author's contention that a given species is doubtful, he can still find an adequate description of it. Among the species that have been generally accepted by protozoologists it is interesting to note that the author gives very good evidence that *Enteromonas hominis* is a small rounded form of *Chilomastix mesnili*. Similarly, the author accepts the recent contention of Thomson and Robertson that the coccidia *Eimeria wenyoni*, *E. oxyspora* and *E. snydersi* are never parasitic in man but are coccidia of herrings, the oocysts of which are ingested and passed through the human intestine. Occasionally, one is struck by peculiar omissions. Thus on pages 259 and 260,

under the statistics of intestinal amebas of man, no mention is made of Boeck's study of 8,029 persons in the United States, although this is probably the most extensive single survey made to date. The third part, fifty-eight pages, is an account of the spirochetes of man and animals and includes one section on parasitic spirilla. Like most present authorities, the author definitely maintains that the spirochetes are not protozoa, but he includes them because their study is intimately associated with that of the protozoa. The fourth part, sixty-one pages, consists of an account of the methods of investigation for the protozoa and the spirochetes. This is an extremely useful outline of such matters as cultural methods, maintenance of forms in animals, cytologic technics and dissection of invertebrate hosts. Appended to this part is a reprint of the "International Rules of Zoological Nomenclature." The fifth part, sixty-five pages, contains a list of known vertebrate hosts of blood parasites and a similar list of the invertebrate hosts of the genera *Leptomonas, Crithidia* and *Herpetomonas*. The sixth part, 101 pages, gives an extensive bibliography of the protozoa and a shorter one of the spirochetes.

This work represents a great achievement on the part of both the author and the publisher, and will be a necessary part of the equipment of every investigator interested in the protozoa. The book is beautifully and profusely illustrated, many of the illustrations being taken from the author's works or published here for the first time. An unusual feature is the inclusion of twenty superbly colored plates depicting various parasitic protozoa of man and animals.

A PRACTICE OF PHYSIOTHERAPY. By C. M. Sampson, M.D. Cloth. Price, $10. Pp. 620, with 146 illustrations. St. Louis: C. V. Mosby Company, 1926.

This is an odd mixture of good electrophysics, much poor pathology, positive assertions backed by too little clinical evidence or none at all, an inordinate use of the editorial "we" and the pronoun "I," and quixotic tilting with self-erected windmills. Despite this, much of the treatment outlined is good, though in numerous instances the author's concept of the underlying pathologic basis is not in accord with that generally accepted. The portions dealing with diathermy, ultraviolet rays and static electricity are well written. The excessive use of the so-called ionizing dose of roentgen ray conceivably might result in disaster both to the tyro in this work and to his patients. The treatment of locomotor ataxia and typhoid needs much more clinical evidence before it can be considered even empirically. The concept of the pathology of these diseases also requires much more scientific proof. The chapters on massage and hydrotherapy are rather sketchy but are good as far as they go. Those on galvanism, faradism and sinusoidal current are disappointingly weak. The use of ultraviolet rays and other allied physiotherapeutic measures in pulmonary tuberculosis have not, in the hands of most men who are well qualified to use them, proved as successful as would be inferred from reading this book. The carefully graduated administration of ultraviolet irradiation, however, is to be commended. While a negative attitude may retard progress, even more so may a too positive one. Two quotations selected at random may illustrate this point. After outlining the treatment of jacksonian epilepsy the author says, "No single failure can be recalled." Of endarteritis obliterans: "One has only to have seen the almost instant improvement which always takes place in endarteritis obliterans under proper diathermy in a sufficiently large number of cases to recognize that here we have a remedy which is so efficient in this very stubborn condition as practically to amount to a specific." The thinking physician well grounded in pathology, whose clinical experience and common sense will enable him to mix with his reading the proper amount of sodium chloride, will find much of interest and real profit in this book. The beginner in physiotherapy had better forego its reading until he has acquired sufficient clinical knowledge to winnow the chaff from the wheat, the fanciful from the real. Here is a book which, despite its too positive assertions, its often questionable pathology, its verboseness, its apparent lack of clinical experience or evidence to substantiate the claims made, contains much that is worth reading. Despite the natural irritation produced by inference of omniscience, it provides food for thought and indicates certain channels in which scientific investigation may result in therapeutic advance.

LEXIKON DER ERNÄHRUNGSKUNDE. Herausgegeben von Dr. E. Mayerhofer, Professor an der Universität Zagreb, und Dr. C. Pirquet, Professor an der Universität Wien. Paper. Lieferungs 3 und 4, pp. 337-892; Lieferung 5, pp. 895-1205. Vienna: Julius Springer, 1926.

This encyclopedic work is a reference handbook of nutrition, dietetics and foodstuffs, with some biographic and historical material. The first two numbers were reviewed in THE JOURNAL, Aug. 29, 1925, page 698. The information is for the most part accurate, and most of the articles are short and to the point. A few articles, such as the one on vitamins, are quite extensive. The foods are classified and given numbers, a so-called Ziffernsystem or Systemzahl. This system does not make any great appeal to the American mind, but the work represents a tremendous amount of time and energy on the part of the authors. It also contains a bibliography from Pirquet's "Ernährungsystem." The whole is a good example of Teutonic industry and ingenuity.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

DIE SCHÄDIGUNGEN DER HAUT DURCH BERUF UND GEWERBLICHE ARBEIT. Herausgegeben von Obermedizinalrat Dr. Karl Ullmann, Privatdozent an der Universität, Dr. Moriz Oppenheim, Primararzt und Professor an der Universität in Wien, und Professor Dr. J. H. Rille, Direktor der Universitätsklinik für Hautkrankheiten in Leipzig. Band II, Lieferung 9-12 (Schluss) und Band III, Lieferung 3-6 (Schluss). Paper. Price, 20 marks, and 24 marks. Pp. 385-567 and 97-308, with illustrations. Leipsic: Leopold Voss, 1926.

Encyclopedic work on occupational dermatoses.

KLINISCHE UND SEROLOGISCHE BEITRÄGE ZUM SCHARLACHPROBLEM. Von Privatdozent Dr. G. Fanconi, Oberarzt an der Universitäts-Kinderklinik in Zürich. Paper. Price, 2.70 marks. Pp. 66, with 13 illustrations. Berlin: S. Karger, 1926.

Monograph on scarlet fever leading to the view that the disease is more than the simple effects of the specific bacterial excitant.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume XIV. Medical Aspects of Gas Warfare. Prepared Under the Direction of Maj. Gen. M. W. Ireland, The Surgeon General. By Col. Wilder D. Bancroft, C. W. S., and others. Cloth. Price, $3. Pp. 876, with 242 illustrations. Washington: Government Printing Office, 1926.

American experiences with poison gases in the World War.

GESUNDHEIT UND KRANKHEIT IN NIETZSCHES LEBEN UND WERK. Von Dr. med. et phil. Kurt Hildebrandt, Oberarzt an den Heilstätten Wittenau bei Berlin. Paper. Price, 8.40 marks. Pp. 159. Berlin, S. Karger, 1926.

An investigation of the mental and physical disorders of Nietzsche.

BERLINER FORTBILDUNGSKURS FÜR AUGENÄRZTE, OKTOBER, 1925. Sammlung von Originalien und Referaten aus dem gesamten Gebiet der Augenheilkunde, nach Eigenberichten zusammengestellt und herausgegeben von Dr. A. Rosenberg. Paper. Price, 9 marks. Pp. 231, with illustrations. Berlin: S. Karger, 1926.

Lectures in a graduate course in ophthalmology.

ANATOMY OF THE WOOD RAT. Comparative Anatomy of the Subgenera of the American Wood Rat (Genus Neotoma). By A. Brazier Howell, U. S. Biological Survey. Number 1—Monographs of the American Society of Mammalogists. Cloth. Price, $5. Pp. 225, with illustrations. Baltimore: Williams & Wilkins Company, 1926.

Guide for students of comparative anatomy.

THE PROSTATE GLAND. By Chester Tilton Stone, M. D. Cloth. Price, $1.50 net. Pp. 109, with 2 illustrations. New York: Allen Ross & Company, 1926.

A weak attempt to put into simple language medical knowledge of the prostate.

TEN WEEKS WITH CHINESE BANDITS. By Harvey J. Howard, M.D., Professor of Ophthalmology, Peking Union Medical College. Cloth. Price, $3. Pp. 272, with illustrations. New York: Dodd, Mead & Company, 1926.

An odyssey of a medical Ulysses among Chinese bandits.

DIE KLINIK DER NIERENKRANKHEITEN. Kurs-Vorlesungen für praktische Ärzte und Studierende. Von Dr. Max Rosenberg, Privatdozent für innere Medizin an der Universität Berlin. Cloth. Price, 13.80 marks. Pp. 252, with 15 illustrations. Berlin: S. Karger, 1926.

Monograph with modern views of diseases of the kidney.

DIE BESTIMMUNG DES ASTIGMATISMUS DURCH DIE SCHATTENPROBE MIT CYLINDERGLÄSERN. Von Prof. Dr. K. Lindner, Vorstand der Augenabteilung der allgemeinen Poliklinik in Wien. Paper. Price, 7.50 marks. Pp. 111, with 83 illustrations. Berlin: S. Karger, 1926.

The control of astigmatism by proper refraction.

UEBER DIE GEISTIGE ENTWICKLUNG HYPOTHYREOTISCHER KINDER BEI SPEZIFISCHER BEHANDLUNG. Von Dr. Med. et Phil. Werner Kornfeld. Paper. Price, 2.70 marks. Pp. 38, with illustrations. Berlin: S. Karger, 1926.

Hyperthyroidism in children.

A DOCTOR'S MEMORIES. By Victor C. Vaughan. Cloth. Price, $5. Pp. 464, with illustrations. Indianapolis: Bobbs-Merrill Company, 1926.

Autobiography of a renowned medical leader.

REMINISCENCES. By George Henry Fox, A.M., M.D. Cloth. Price, $3.50. Pp. 248, with illustrations. New York: Medical Life Press, 1926.

Memories of a dermatologic pioneer.

DIAGNOSTISCHE UND THERAPEUTISCHE IRRTÜMER UND DEREN VERHÜTUNG-CHIRURGIE. Herausgegeben von Prof. Dr. J. Schwalbe, Geh. San.-Rat in Berlin. Achtes Heft. Peritoneum. Von Prof. Dr. O. Kleinschmidt, Oberarzt an der chirurgischen Universitätsklinik zu Leipzig. Appendizitis. Von Geh. Med.-Rat Prof. Dr. E. Payr, Direktor der chirurgischen Universitätsklinik zu Leipzig. Äussere Hernien. Von Prof. Dr. J. Hohlbaum, Oberarzt an der chirurgischen Universitätsklinik zu Leipzig. Paper. Price, 16.50 marks. Pp. 261, with 36 illustrations. Leipsic: Georg Thieme, 1926.

THÉRAPEUTIQUE CHIRURGICALE. Par. P. Lecène, professeur à la faculté de médecine de Paris, et R. Leriche, professeur à la faculté de médecine de Strasbourg. Tome I. Généralités—Membres. Par R. Leriche. Tome II. Tête, bouche, cou, thorax, glande mammaire. Par P. Lecène. Rachis, bassin. Par R. Leriche. Nez, oreilles, larynx. Par F. Lemaitre. Cloth. Price, $2.40 per volume. Pp. 643 and 507. Paris: Masson & Cie, 1926.

UEBER DIE RHINOGENE NEURITIS RETROBULBARIS. Von Prof. Dr. J. Meller, Vorstand der I. Univ.-Augenklinik, und Dr. Oskar Hirsch, Privatdozenten an der Universität, Wien. Paper. Price, 4.50 marks. Pp. 62, with 6 illustrations. Berlin: S. Karger, 1926.

KRITISCHE BESCHOUWINGEN EN ENKELE PROEVEN OVER DE ENTSTOF VAN CALMETTE EN GUÉRIN TER VOORBEHOEDENDE ONVATBAARMAKING TEGEN DE TUBERCULOSE. Door Willem Schuurmans Stekhoven. Paper. Pp. 121. Groningen: J. B. Wolters' U. M., 1926.

SAN FRANCISCO CANCER SURVEY: Third Preliminary Report. (Fifth and Sixth Quarterly Reports). By Frederick L. Hoffman, LL.D., Consulting Statistician Prudential Insurance Company of America. Newark: Prudential Insurance Company of America, 1926.

TRAVAUX DE LA CLINIQUE CHIRURGICALE DE LA SALPÉTRIÈRE. Par A. Gosset, professeur de clinique chirurgicale à la faculté de médecine de Paris. First series. Paper. Pp. 243, with illustrations. Paris: Masson & Cie, 1926.

DEMENTIA RACHITICA. Studien über die sogenannte zerebrale Komponente der Rachitis. Von Dr. Kurt Huldschinsky. Kinderarzt in Berlin-Charlottenburg. Paper. Price, 2.70 marks. Pp. 60. Berlin: S. Kargar, 1926.

RACINE HEALTH DEPARTMENT: STUDY OF TUBERCULOSIS DEATHS, 1916-1925. Compiled by W. W. Bauer, M.D., Commissioner of Health, and Anna Makis, R.N. Paper. Pp. 25. Racine, 1926.

TRANSACTIONS OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA (The State Board of Health). Meeting of 1926, Fifty-Ninth Annual Session. Cloth. Pp. 653. Montgomery, 1926.

CIRUGIA DE LA ÚLCERA GASTRO-DUODENAL: Principios fundamentales de la indicación y de la técnica. Por E. Ribas Ribas. Paper. Pp. 149, with illustrations. Barcelona, 1926.

LES NÉOPLASMES ET LEUR THÉRAPEUTIQUE MÉDICALE. Par le Docteur Ed. Baronaki. Paper. Price, 12 francs. Pp. 135. Paris: A. Maloine, 1927.

NATIONAL EPIDEMIC PREVENTION BUREAU, PEKING, CHINA. General Review No. 1, 1919 to 1925. Peking, 1926.

Medicolegal

Conclusions Reached Concerning Raw Milk

(State ex rel. Knese et al. v. Kinsey et al. (Mo.), 282 S. W. R. 437)

The Supreme Court of Missouri says that the relators filed their petition in this court praying for a writ of mandamus commanding the respondents, who constituted the board of public service of the city of St. Louis, to issue to them permits to sell milk in that city. The court appointed a commissioner to take evidence, and a great volume of it was taken and submitted for the consideration of the court. A great deal of evidence was taken relating to the condition of the relators' dairies, but the commissioner, after a colloquy between counsel, decided that the refusal of permits was only on the ground that the relators refused to pasteurize their milk, and the evidence offered was for the purpose of showing whether the section of a city ordinance requiring the clarification and pasteurization of milk, with an exception as to certified milk, was reasonable or unreasonable. The city might require standards of quality in the milk dealt in, where the state statutes made none; but the ordinance under consideration forbade any one to deal in raw milk, a product which the legislature authorized as a lawful product. On the face of the ordinance and the statutes, the city had no authority to forbid the dealing in raw milk, and could not lawfully refuse permits to milkmen to sell it.

The conclusions reached by the court are: 1. Raw milk is healthful, nutritious food, particularly for children, which was not disputed. 2. From the great weight of the evidence it was plain that raw milk as a general thing is more nutritious, more easily assimilated, and better food, especially for children, than pasteurized milk, though it is probable that some individuals may thrive better on pasteurized and boiled milk than on raw milk. 3. There was nothing in the record to show that it is unpractical for the city to cause sufficient inspection and standardization of dairies so as reasonably to insure the production and distribution of wholesome raw milk free from dangerous bacteria, without the expense attending the production of certified milk. Therefore no reasons appeared why the relators should not be granted permits to deal in it. They had a right to deal in it under the statutes and constitution of the state, and a denial of that right was supported by neither law nor reason. Accordingly, the peremptory writ should issue.

Previous Insanity—Physicians' Declarations

(State v. Jones (N. C.), 133 S. E. R. 81)

The Supreme Court of North Carolina, in affirming a judgment of conviction of murder, says that evidence of previous insanity, admittedly competent on the question of the defendant's sanity at the moment of the killing of a man by him, may well have determined the burden, so called, of proceeding with the evidence, but it cannot be held that such evidence, although accompanied by the presumption of the continuance of the insanity, affected the rule as to the burden of proof on the question involved in the issue. When a totally independent defense in a criminal action is set up as insanity, the burden is on the defendant on the question involved in the issue of the sanity of the defendant at the time he shot and killed the person he did. The fact of previous insanity, if admitted or proved, accompanied by the presumption of its continuance, may be relied on by the defendant to sustain, prima facie, the burden which he assumes by his plea of insanity, as a defense, but it cannot be held that the mere fact of insanity, prior to the commission of the act alleged to be a crime, although such condition is presumed to continue, relieves the defendant of the burden imposed on him by the law of North Carolina to offer evidence sufficient at least to satisfy the jury that he was insane at the time of the commission of the act, and therefore not responsible for his act as a crime. The presumption is merely evidentiary, and is not conclusive.

There was no evidence on this record that the defendant had been adjudged insane by a court, which recognized the

same standard of sanity as that recognized and enforced in North Carolina. There was evidence that he had been declared insane by the prison physician of the state prison of Connecticut, and in consequence of such declaration had been confined in the insane ward of the state prison. It cannot be held that the declaration of the prison physician, although made in the performance of his official duty, that the defendant was then insane, had the force and effect of an adjudication by a court of competent jurisdiction that he was insane and therefore not responsible, under the law of North Carolina, for his acts subsequently committed in North Carolina.

It was manifest from this record that the standards and tests of sanity adopted and acted on by members of the medical profession who are admitted experts on the subject of mental diseases differ so radically from those recognized and enforced by the courts of North Carolina that it cannot be held as a matter of law that a defendant who has been declared insane by a physician in accordance with standards and as the result of tests recognized and approved by his profession is exempt from responsibility to the law for his acts, subsequently committed, because of the presumption of the continuance of the mental condition of the patient at the time of the declaration to the time when the subsequent act was committed in North Carolina. Such declaration, although made in the performance of official duty, can be no more conclusive than the opinion of a physician, given by him as a witness at the trial, that the defendant is insane. It is evidence only, to be submitted to the jury.

The physician deals with his patient solely from the standpoint of the individual, while the courts, in administering the law, must consider the interests of society as well as of the individual. The physician would heal those who are sick, in mind as well as in body, and when the disease is in his opinion incurable, and may cause his patient to injure himself or others, his duty is to protect the individual as well as others by isolation and confinement, only. The courts, however, are required to act on the philosophy underlying the right and duty of the state to punish offenders against its laws, and thus not only undertake the reformation of the offender, but also endeavor to deter others from the commission of crime by the fear of like punishment.

City Not Liable for Injury by Sterilizer in Hospital

(Zachert v. City of Louisville (Ky.), 282 S. W. R. 1071)

The Court of Appeals of Kentucky, in affirming a judgment dismissing the plaintiff's action for damages, says that the plaintiff, while employed as a servant at the Louisville City Hospital, an eleemosynary institution established and maintained by the defendant city, sustained numerous injuries to her face, head and other parts of her body, whereby she was disfigured and maimed for life, by the explosion of the boiler or drum of a steam sterilizer located in and used by the hospital. She claimed that the explosion resulted from the opening by her of the door to the boiler or drum of the sterilizer at the command of a nurse superior to her in authority, whom she was then attending as a helper and was required to obey. Her alleged right of recovery against the defendant city was rested on the ground that the explosion and injuries therefrom to her were caused by the gross negligence of the defendant's agents and employees, her superiors in authority, entrusted with the control of the hospital and the care of its inmates, in permitting the boiler or drum of the sterilizer to become and remain overcharged with steam beyond its capacity and power to withstand the pressure thereof, and also in failing to relieve or lessen such pressure by shutting off the steam from the drum in time to prevent the explosion.

In sustaining the general demurrer which the defendant filed to the plaintiff's petition, and in dismissing her action, the circuit court followed the numerous decisions rendered by the court of appeals, all to the effect that a municipal corporation is not liable in actions for negligence in the performance of public duties incident to the exercise of its governmental functions, and that persons employed in the performance of such duties by the municipal corporation act as public officers, charged with a public service, and, being mere instruments by which such public duties are performed, the doctrine of respondeat superior (let the master answer) does not apply to such employments, and, as declared in many of the cases decided in this judisdiction, to hold otherwise and subject the municipality to responsibility for the negligence of such employees would indirectly impose on it a liability from which it is by law, or consideration of public policy, exempt. The defendant city, by authority of the state constitution and provisions of its municipal charter, is clothed with power to erect, establish and maintain hospitals, almshouses and other buildings for the preservation of the public health, and when for that purpose it has established a hospital, it is not responsible to persons injured by reason of the misconduct or negligence of its agents and employees therein, and this would be true whether the person injured was a patient of the hospital or an employee therein.

Actions for References to Germ Carrier and to Dairy

(Miles v. Record Pub. Co. (S. C.), 133 S. E. R. 99. Watkins v. Record Pub. Co. (S. C.), 133 S. E. R. 100)

The Supreme Court of South Carolina, in affirming a judgment for $600 damages in favor of plaintiff Miles in his action for alleged libel, says that in May, 1924, the city of Columbia was threatened with a serious epidemic of typhoid. The board of health took prompt and vigorous action to discover the cause and stamp it out. It was discovered that some affected with the disease were customers of a particular dairy near the city, in which dairy the plaintiff was a milker, recently employed. Pending an examination of the premises and of the persons there employed, the state health officer, May 23, ordered the dairy closed. May 27, the dairy was allowed to reopen and the plaintiff to resume his occupation, although he did not receive a certificate of health until June 3. He finished out the week at the dairy, and, on account of the falling off of customers, was let go. In the meantime, May 25, two days after the dairy was closed, the defendant published an account of what had been done, commending the energy with which the health department had grappled with the situation, and including the statement:

> The investigators found out, as another detail of the case, that the milk had become contaminated almost overnight, as a new milker who was in charge of the dairy for the regular milkman, who was ill, was the "importer" of the germs. Working the investigation down to the finest possible point, the health authorities located the source of the germs, which the new milkman had unknowingly transported to his new work.

The plaintiff alleged in his complaint that he was the "new milkman" referred to in the article; that by reason of the publication of such false statement he had lost his position as a milker and could not obtain employment at other dairies; and he further alleged that he had been held up to the public as a person to be shunned and avoided and almost ostracized. From the judgment entered in his favor the defendant appealed, contending that the presiding judge had erred in not granting a nonsuit on the ground that the plaintiff had proved absolutely no damages, the testimony not sustaining his allegations of damages. But the supreme court thinks that the motion for a nonsuit was properly overruled for this reason: The charges contained in the publication that the plaintiff was an "importer of germs," a germ carrier, and had transmitted the germs to the milk which he handled, were libelous per se (in and of themselves), and as such did not require the proof of any damages, general or special; they were presumed to result as a matter of law. They were libelous on two grounds: 1. They imputed to the plaintiff a physical condition which would necessarily cause him to be shunned and avoided by society. 2. They were calculated to affect his business or employment seriously by imputing to him a want of fitness for engaging in it.

The dairy referred to was operated by one Watkins, who also instituted an action for libel. The defendant admitted the publication and sought justification in its truth. Plaintiff Watkins offered evidence tending to establish his claim for damages; the defendant, its claim of justification. At the close of all the evidence, the circuit judge directed a verdict in favor of plaintiff Watkins, leaving the amount of damages to be determined by the jury. The verdict was for $6,000, which, on motion for a new trial, was reduced by order and remission to $4,000. But judgment for the latter amount is reversed by the supreme court, and the case remanded for a new trial, because there were two questions of fact, as to

which the defendant offered evidence, which should have been left to the determination of the jury: (1) Whether the damages suffered by plaintiff Watkins resulted from the publication, or from other matters on which there was evidence; (2) whether the defendant's plea of justification had been sustained. There was error, therefore, in the direction of a verdict, in this case.

Actionable Injury Although Hurt Not Visible

(Johnson v. Sampson et al. (Minn.), 208 N. W. R. 814)

The Supreme Court of Minnesota says that on the whole it does not see any good reason why a wrongful invasion of a legal right, causing an injury to the body or mind which reputable physicians recognize and can trace with reasonable certainty to the act as its true cause, should not give rise to a right of action against the wrongdoer, although there was not a visible hurt at the time of the act complained of. Of course, there is always a possibility of trumped-up claims if there may be a recovery when evidence of bodily injury cannot be discovered immediately. However, the matter is in the control of the trial courts, and verdicts for plaintiffs for any substantial amounts, when based chiefly on proof of subjective symptoms, will not usually be allowed to stand. More specifically, the court holds that a cause of action was stated by a complaint which alleged that, confronting the plaintiff, a school girl 15 years of age, the defendants, in each other's presence, made a charge against her of unchastity, which was false, and by reason thereof the plaintiff suffered great mental anguish, and received a nervous shock which seriously and permanently impaired her health. If the accusation was false and without justification, there was an invasion of the plaintiff's legal right to be secure in her reputation for virtue, and if in consequence thereof she was injured in the manner alleged, there might be a recovery, and an action for slander was not her only remedy. The suddenness and seriousness of the charge would certainly shock a young girl, produce some degree of mental suffering, and would be likely to do harm to her nervous system. An intention to produce the effects alleged to have been produced must be imputed to the defendants.

Attending Physicians Testifying in Criminal Case

(Davenport v. State (Miss.), 108 So. R. 433)

The Supreme Court of Mississippi, in affirming a judgment of conviction of defendant Davenport of manslaughter, holds, according to a syllabus by the court, that when a person is on trial for the unlawful killing of another, it is not reversible error, under section 3695 of the code of 1906 of that state, to admit the testimony of the physician who attended the deceased with reference to the condition of his wounds. The principal assignment of error on this appeal was the admission of the testimony of the physicians who attended the deceased after he was wounded. The testimony of these physicians as to the nature of the wound, the cause of the death and the treatment given was objected to on the ground that it was inadmissible because privileged under the section referred to, which reads:

> All communications made to a physician or surgeon by a patient under his charge or by one seeking professional advice are hereby declared to be privileged, and such physician or surgeon shall not be required to disclose the same in any legal proceeding, except at the instance of the patient.

In the opinion prepared by Judge Ethridge, he says, among other things:

> It is the opinion of Judges Anderson and Holden that this statute does not apply in criminal cases, and for that reason that there was no error in admitting the evidence. It is the opinion of myself that the appellant is not entitled to raise the objection, and that, if it was error to admit the evidence, it is error of which he cannot complain, and therefore the judgment of the court below should not be reversed. It is the opinion of Judges McGowen, Cook and Smith that the evidence was privileged and that it was error to admit it, that the statute applies to all kinds of legal proceedings, including criminal prosecutions, and that the judgment of conviction should be reversed because of the error in admitting this evidence.

In response to a suggestion of error which was made and overruled, Judge Anderson stated, in an opinion, that:

> As it appears to me, the members of the court holding that the statute involved applies to criminal prosecutions are sticking in the bark—they fail to go to the heart of the question. They are controlled by the letter of the statute; they cannot get away from that. The effect of their position is that, where the language of a statute is plain, it must be followed, regardless of consequences. That is not the law as declared by this court and numerous other courts. . . . The statute involved has been the law of this state for a good many years. It is not known to have ever been invoked in a criminal prosecution before. It is certain that this is the first time the question has been before this court. Doubtless many criminal cases have arisen since the statute was adopted in which the question could have been raised. And probably the reason it never has been done is that the bench and bar of the state have never thought of the statute as applying to criminal prosecutions. Such a history of a statute ought to have at least some weight in determining its purpose and meaning.

Attorney on Roentgenograms—"Total Incapacity"

(Lumbermen's Reciprocal Ass'n v. Wells (Texas), 283 S. W. R. 208)

The Court of Civil Appeals of Texas, in reversing a judgment for damages which plaintiff Wells obtained for personal injuries, says that on the trial his counsel took the stand as a witness and offered to testify that on the evening before he had caused a certain physician to make a roentgenogram of the plaintiff's injured leg and ankle; and roentgenograms, as made by the physician, were offered in evidence and exhibited to the jury, showing the condition of the broken leg, the extent of its healing, and the like. Counsel for the defendant objected to the admission of the roentgenograms in evidence without its being shown that they were correctly made and by a skilful person in that line. Thereupon counsel for the plaintiff stated that he was present when the roentgenograms were made by the physician and saw him make them, and went into detail in the matter, saying that he knew that the physician had made correct pictures of the plaintiff's broken leg and ankle, and that the physician was competent to make correct pictures, and that he was properly equipped as a physician and surgeon to make correct roentgen-ray pictures. Counsel for the defendant still objected to the introduction of the roentgenograms and the testimony of counsel for the plaintiff, on the ground that said counsel was not shown to be qualified to testify that the roentgenograms were correctly made and that the physician was a competent physician and surgeon to make them and that he was properly equipped, as a physician and surgeon, with the necessary machinery to make them; whereupon the trial court overruled the objection of counsel for the defendant and permitted the roentgenograms to be introduced in evidence on the testimony of counsel for the plaintiff as to their correctness, etc. This was error, and on a very vital point in the case. The court of civil appeals was not cited to authority by counsel for the plaintiff in his brief that sustained the ruling of the trial court on this point. The court of civil appeals is unable to say how counsel for the plaintiff would be a competent witness to testify as to a matter of professional and surgical skill of this kind, or how he would be expected to know whether the physician was a competent man to use the scientific methods of taking this character of pictures, and to know that he was properly equipped for such business, and, there being nothing in the record in this case to indicate how counsel for the plaintiff could know these facts, this court must hold that the objection to the testimony on this point ought to have been sustained.

The expression "total incapacity," as used in the workmen's compensation act of Texas, means that one must be so injured that he becomes disqualified from performing the usual tasks of a workman to such extent that he cannot procure and retain employment.

Society Proceedings

COMING MEETINGS

Isthmian Canal Zone, Medical Association of, Ancon, Dec. 21. Dr. Lawrence Getz, Hospital Santo Tomas, Panama City, Panama Canal Zone, Secretary.

Society of American Bacteriologists, Philadelphia, Dec. 28-30. Dr. James M. Sherman, Cornell University, Ithaca, New York, Secretary.

Tri-States Medical Association of Mississippi, Arkansas and Tennessee, Memphis, Tenn., Feb. 1-3. Dr. A. F. Cooper, Bank of Commerce Building, Memphis, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

Annals of Surgery, Philadelphia

84: 465-624 (Oct.) 1926

Alkalosis. F. A. Bothe, Philadelphia.—p. 465.
Errors in Diagnosis of Surgical Conditions. M. F. Gregory and F. E. Vosburgh, New York.—p. 473.
*Surgical Aspect of Blood Dyscrasias Associated with Splenomegaly. J. Speese, Philadelphia.—p. 477.
*Fibrosarcomatous Tumors of Skin of Trunk. A. E. Hertzler, Halstead, Kan.—p. 489.
*Exophthalmic Goiter and Toxic Adenoma: Similarity of Response to Iodine. A. Graham and E. C. Cutler, Cleveland.—p. 497.
*Bladder Disturbances in New Growths of Brain and Spinal Cord. C. A. Elsberg, New York.—p. 509.
Analogies Between Biliary Tract and Urinary Tract. E. Beer, New York.—p. 517.
Ectopic (Pelvic) Completely Fused (Cake) Kidney Associated with Various Anomalies of Abdominal Viscera. W. W. Looney and D. L. Dodd, Dallas, Texas.—p. 522.
Renal Arterial Variations and Extraperitoneal Abdominal Nephrectomy. B. Lipshutz and C. Hoffman, Philadelphia.—p. 525.
*Urinary Obstructions in Childhood. C. G. Mixter, Boston.—p. 533.
*Essential Thrombocytopenic Purpura—Purpura Hemorrhagica; Splenectomy. E. Beer, New York.—p. 549.
Acute Pancreatitis. I. Abell, Louisville, Ky.—p. 561.
*Cysts of Omentum. W. J. Ryan, Philadelphia.—p. 567.
Intestinal Obstruction. J. B. Deaver, Philadelphia.—p. 571.
*Intestinal Obstruction Following Appendectomy. G. W. Carlson and V. F. Marshall, Appleton, Wis.—p. 583.
Reduction of Colonic Intussusception by Air Inflation. C. E. Farr, New York.—p. 588.
*Mechanical Factors in Chronic Appendicitis. H. G. Holder, San Diego, Calif., and W. C. Menninger, Topeka, Kan.—p. 591.
Stabilization of Paralytic Talipes Varus. F. S. Chambers, Philadelphia.—p. 608.
Paraffinoma of Knee. S. Kleinberg, New York.—p. 616.

Splenomegaly in Blood Dyscrasias.—In Speese's opinion, splenectomy offers the only chance for a cure in purpura hemorrhagica. Immediate cessation of symptoms and apparent cure of the disease often follows splenectomy. The operative mortality is surprisingly low in view of the grave condition of most of these patients at the time of operation.

Fibrosarcomatous Tumors of Skin.—The importance of early recognition of these tumors, Hertzler says, lies in the fact that if a complete removal of the tumor is instituted, together with the capsule, a permanent cure is assured. If shelled out from this capsule, a recurrence is most certain to take place for which complete removal may be impossible. They are fibrosarcomatous in structure, tend to grow slowly and metastasize by way of the lymphatics. In appearance and clinical disposition they resemble closely the fibrosarcomas sometimes seen in the popliteal space which the old English writers called "recurrent fibroids." These tumors differ from most sarcomas by their long duration. In this they resemble some of the slowly growing melanoblastomas. One of Hertzler's cases existed for twenty-five years before rapid growth began.

Iodine Administration in Toxic Goiter.—In view of their experience, Graham and Cutler feel justified in recommending the administration of iodine as a measure preliminary to operation in all cases of toxic goiter whether the thyroid is adenomatous or nonadenomatous.

Urinary Disturbances in Brain Tumor.—Of 165 patients with brain tumors whose histories are analyzed by Elsberg, sixty had urinary disturbances. Incontinence, occasional or persistent, was present in thirty-nine cases; dysuria in eighteen cases and increased frequency in nineteen cases.

Urinary Obstructions in Childhood.—Forty-six cases of obstruction of the urinary outflow in childhood are reviewed by Mixter. These urinary obstructions are chiefly due to congenital anomalies, and may be caused by intrinsic lesions of the urinary tract or by pressure from without. Intrinsic lesions are situated most commonly at the ureteropelvic junction, the vesical orifice or the region of the verumontanum in the male urethra. Causes of pressure from without on the urinary tract are usually anomalous renal vessels or reduplication of the pelvis and ureter. In any type of lesion encountered, it is imperative to relieve the obstruction to the urinary outflow at an early stage to prevent extensive renal destruction. Cystoscopy, cystograms and ureteropyelograms are indicated in childhood in all cases suggesting obstructive urinary lesions or showing persistent or recurrent pyuria.

Thrombocytopenic Purpura.—Beer reports five typical cases, four of chronic relapsing thrombocytopenic purpura in which the end results as seen from months to years after splenectomy were most gratifying, the patients having been restored to complete health. In the fifth case, which was acute, splenectomy was done, but an early fatality ensued.

Cysts of Omentum.—A case of large multilocular cysts of the omentum, probably of lymphatic origin, is reported by Ryan. Nineteen similar cases are already on record in the literature.

Intestinal Obstruction Following Appendectomy.—The outstanding fact brought out by Carlson and Marshall in their analysis of twenty-one cases is that an early diagnosis with operation reduces mortality, prevents development of complications, shortens convalescence, and makes sequelae, such as postoperative intestinal obstruction, less apt to develop. The outstanding etiologic factors were postoperative adhesions. The time interval between operation and the onset of obstruction is important. In this series, obstruction occurred from two days to eighteen years following operation. A past history of appendicitis with drainage is an important factor in arriving at a diagnosis.

Mechanical Factors in Chronic Appendicitis.—Holder and Menninger assert that a large percentage of the cases commonly diagnosed as chronic appendicitis are directly caused by a variety of mechanical factors acting on the appendix. These may be congenital or acquired in origin, but either type may affect blood supply and motility, leading to pathologic changes and symptoms. Appendixes which were microscopically normal presented some mechanical abnormality in 98 per cent of cases. Hence an inflammatory process is not a prerequisite to the clinical picture of chronic appendicitis.

Archives of Internal Medicine, Chicago

38: 413-552 (Oct.) 1926

*Glandular Fever (Infectious Mononucleosis). C. W. Baldridge, F. J. Rohner and G. H. Hansmann, Iowa City.—p. 413.
*Lipoid Nephrosis. F. D. Murphy and L. M. Warfield, Milwaukee.—p. 449.
*Carcinoma of Cortex of Suprarenal with Virilism. H. M. Feinblatt, New York.—p. 469.
*Urea Retention Estimation by Mercury Combining Power of Blood. P. S. Hench and M. Aldrich, Rochester, Minn.—p. 474.
Formation of Organic Acids and Retention of Chlorides in Lobar Pneumonia. C. Holten, Copenhagen, Denmark.—p. 489.
Changes in Chemical and Physical Characteristics of Blood Following Administration of Parathyroid Hormone. A. Cantarow, W. R. Caven and B. Gordon, Philadelphia.—p. 502.
Quantities of Serum Albumin, Globulin and Fibrinogen in Blood Plasma in Acute and Chronic Nephropathies. G. Fahr and W. W. Swanson, Minneapolis.—p. 510.
*Combining Power of Proteins with Rose Bengal: II. Application as Quantitative Test on Spinal Fluid. S. M. Rosenthal and F. D. Ackman, Montreal.—p. 527.
*Peristalsis in Loop of Small Intestine. L. E. Hines and H. C. A. Mead, Chicago.—p. 536.
*Aid in Diagnosis of Typhoid. C. A. Mills and K. V. Kitzmiller, Cincinnati.—p. 544.

Glandular Fever.—Glandular fever (infectious mononucleosis) is an acute infectious disease of unknown etiology, usually of short duration, characterized by fever, enlarged lymph glands, and the occurrence of numerous abnormal mononuclear cells in the circulating blood. Streptococci, diphtheroid bacilli and the spirochetes and fusiform bacilli of Vincent's angina have been mentioned as etiologic agents. The portal of entry is considered by some to be the faucial or pharyngeal tonsils, by others the gum margins, and by still others the gastro-intestinal tract. Neither the organism causing the disease nor its portal of entry has been proved.

Baldridge et al. present the data obtained from a study of fifty cases.

Lipoid Nephrosis.—In four cases of a kidney disease corresponding to Munk's lipoid nephrosis reported by Murphy and Warfield, one case observed from the beginning to the end of the disease established the fact that it is a tubular lesion and can occur without any glomerular inflammatory lesion. The authors believe that Epstein's chronic nephrosis and their cases, representing examples of Munk's lipoid nephrosis, are identical. Pure cases of lipoid nephrosis are not common, but the routine use of the polarization attachment to the microscope in the examination of urinary sediment from suspected patients will doubtless uncover other cases of this type. Secondary lipoid degeneration of the tubules will often be found. The prognosis in most of the cases is good. The cause is still veiled in obscurity. There is no specific treatment, but the high protein low fat diet of Epstein, combined with reduction in the intake of sodium chloride, are rational procedures.

Carcinoma of Suprarenal with Virilism.—Feinblatt reports the case of a young woman who progressively developed virile characteristics, including facial hypertrichosis, the masculine type of abdominal and axillary hair, a low pitched voice and a masculinoid facies. Later, a tumor was palpated in the region of the right kidney. Necropsy revealed a large carcinoma of the cortex of the right suprarenal gland, with extension by way of the vena cava but without distant metastasis.

Estimating Urea Retention.—The method described by Hench and Aldrich is based on the principle that mercury combines with such products as urea, creatinine and uric acid, when a solution of a mercuric salt is added to a solution containing these nitrogenous products. As mercury is added, combination continues until the mercury combining power of the solution is satisfied, after which excess mercury appears in the solution. The excess mercury is readily detected by adding a drop of solution to be tested to a drop of saturated sodium carbonate on a white spot-plate. A dark, reddish brown precipitate indicates the presence of excess mercury. The method is here applied to the protein free blood filtrate obtained by the use of trichloracetic acid. The mercury combining power of this filtrate will vary with changes in the concentration of blood urea.

Testing Combining Power of Proteins.—A colloidal reaction dependent on the adsorption of rose bengal has been applied by Rosenthal and Ackman as a quantitative test on the spinal fluid. The quantity of dye adsorbed is a function of both the concentration and the nature of the proteins present in the fluid. The highest results were obtained in pyogenic and tuberculous meningitis. Twenty-four cases of untreated neurosyphilis gave abnormal values, and the results in general paralysis showed a tendency to be higher than those in tabes and cerebrospinal syphilis. Seven of the forty-three pathologic fluids showed increased combining power for rose bengal, although no increase in the total proteins could be demonstrated.

Peristalsis in Small Intestine.—A man with congenital umbilical hernia containing a single loop of small intestine was used by Hines and Mead for the study of intestinal movements. Active peristaltic waves were present in 89 per cent of hunger periods and in 19 per cent of nonhunger periods. Reverse peristalsis was observed consistently during periods of active movement. It is probably normal in the small intestine. Active progressive and reverse waves were not usually associated with pain, but tonic spastic contractions were always accompanied by violent, colicky pain. The tonic contractions occurred twice during periods of diarrhea and once when hunger was the only complaint. Active intestinal movement was initiated by inflating an intragastric balloon. Intestinal movements were apparently neither inhibited nor accelerated during sleeping periods.

Antithrombin Production in Typhoid.—The results of tests made by Mills and Kitzmiller on thirteen typhoid patients demonstrate a high antithrombin production during the febrile period, with practically twice the normal antithrombin content in every case. All but two of the nontyphoid cases that showed this high antithrombin production were afebrile cases of a distinctly chronic character, so that no confusion in diagnosis was possible. Miliary tuberculosis, so often confused with typhoid, is entirely different in its antithrombin curve. Here, instead of a great excess of antithrombin, there is actually less than normal. This gives a differential diagnostic point that promises to be of great value. A logical basis is established for explaining the hemorrhagic tendency in typhoid.

Archives of Otolaryngology, Chicago

4: 281-376 (Oct.) 1926

Ablation Experiments on Labyrinth of Frogs. J. Tait, Montreal. —p. 281.
Postadenoidal Speech. J. A. Glassburg, New York.—p. 296.
*Typhoid Simulating Sigmoid Sinus Thrombosis. O. J. Dixon, Kansas City, Mo.—p. 298.
Zygomatic Mastoiditis Without Clinical Otitis Media. M. L. Breitstein, Baltimore.—p. 300.
*Phenobarbital in Acute Cocaine Intoxications. M. R. Guttman, Chicago. —p. 304.
*Easier Method of Introducing Esophagoscope. M. J. Mandelbaum, New York.—p. 307.
Pathology of Spheno-Ethmoidal Sinusitis. B. J. McMahon, St. Louis. —p. 310.
Extensive Lung Abscess Involving Entire Right Inferior Lobe Treated Successfully with Suction Through Bronchoscope. J. W. Miller, New York.—p. 334.
New Tonsil Needle Holder and Artery Hemostat. M. A. Weinstein, Philadelphia.—p. 338.
New Procedure for Closure of Nonspecific Perforations of Nasal Septum. M. A. Lischkoff and C. J. Heinberg, Pensacola, Fla.—p. 342.

Typhoid Simulating Sigmoid Sinus Thrombosis.—Dixon's patient complained of earache, which was manifested ten days after removal of tonsils and adenoids. There was no mastoid tenderness. Two days before, the boy had had a profuse epistaxis. The urinalysis was normal, and the white blood count was 8,300. Twelve hours after admission, the temperature rose to 104 F. and remained between 102 and 104 for three days, when it fell to 99.2. Following this, the patient had a severe chill lasting for fifteen minutes and a sharp elevation of temperature to 105.3. The white blood count was 5,200. Exactly twenty-four hours later, the temperature again dropped to 99, he had another severe chill, there was an elevation of temperature to 105, and the leukocyte count was 4,600. The patient did not complain of pain at any time. The temperature stayed between 101 and 106 for two days, then fell to 100, and returned quickly to 105, without a chill. The white blood count was 4,300. The pulse varied between 90 to 110, and the respiratory rate was 30. The urine remained normal, and the bowels were constipated. Blood smears at this time were negative for malaria, and blood cultures were sterile. There was a slightly positive Widal reaction. The patient's drowsiness increased, and he had the characteristic typhoid breath. The spleen was distinctly palpable, and he had considerable tympanites. A delayed complete history revealed that typhoid had developed in several persons in the immediate vicinity of the patient's home. The course of the typhoid was uneventful, and at the end of four weeks the patient's temperature returned to normal. Without warning, after five days with the temperature normal, marked cellulitis developed at the back of the right ear. Two days later, this postauricular abscess was drained, and the underlying infected mastoid process was cleaned out.

Phenobarbital in Acute Cocaine Intoxications.—Guttman has found phenobarbital to be a very valuable drug in the treatment of acute cocaine intoxications. It may be used prophylactically, before cocaine is used for local anesthesia, in subjects known to be sensitive to the latter. It may supplant morphine as a preoperative sedative, and thus may act also in a prophylactic capacity. Its intravenous use in cases of severe intoxications or collapse due to cocaine is indicated on a rational basis.

Easier Method of Introducing Esophagoscope.—In the method described by Mandelbaum, the esophagoscope is introduced in the usual manner, and passed into the left pyriform sinus down "to" and "gently" against the upper margin of the constricted cricopharyngeus muscle. It is kept gently fixed in this location, just at the constricted lumen. The bougie, is rapidly passed down the tube "to" the constricted

ring of the cricopharyngeus muscle. As soon as the bougie meets with this point of resistance, it is "gently" passed about 0.5 cm. beyond the distal opening of the esophagoscope, and then gently "withdrawn" about the same distance. By gently withdrawing the bougie a very short distance, usually about 0.5 cm., and again passing it gently downward from about 0.5 cm. to 0.7 cm. against the contracted muscle, the latter will almost invariably become momentarily relaxed, and the upper circular fibers of the cricopharyngeus will grasp the point of the bougie. Repeating this procedure, the esophagoscope will finally with the "gentlest" pressure, "ride" over the preceding tip of the bougie, past the cricopharyngeus into the esophagus. The bougie is then withdrawn and the examination continued as usual.

Atlantic Medical Journal, Harrisburg, Pa.

30: 1-48 (Oct.) 1926

Medicine and State. H. W. Albertson, Scranton, Pa.—p. 1.
Cholecystography: Routine Procedure in Roentgen-Ray Examination of Gastro-Intestinal Tract. G. E. Pfahler and B. P. Widmann, Philadelphia.—p. 5.
Actinomycosis in Pennsylvania: Case. L. G. Beinhauer, Pittsburgh.—p. 11.
*Sacral Anesthesia in Operations on Rectum. J. S. Lundy and C. F. McCuskey, Rochester, Minn.—p. 14.
Ethylene and Oxygen Anesthesia in General Surgery. D. Guthrie, Sayre, Pa.—p. 20.
Pyelitis in Infancy. E. Hess, Erie, Pa.—p. 21.

Sacral Anesthesia in Operations on Rectum.—It is shown by Lundy and McCuskey that caudal and trans-sacral block usually provide a most satisfactory anesthesia and relaxation for operations on the rectum. Careful attention to detail in the technic of injection is important. Marked untoward reactions are avoided by making injections slowly. Five minims (0.3 cc.) of 1:1,000 solution of epinephrine to each 100 cc. of procaine hydrochloride solution has not resulted in marked reactions to the epinephrine. A patient who is a poor prospect for local anesthesia may be converted into a good prospect by the judicious use of morphine in amounts sufficient to quiet him without jeopardizing his safety. Failure to anesthetize is usually due either to failure to inject the procaine-epinephrine solution into the caudal canal, or to starting operation before anesthesia can become established.

Canadian Medical Association Journal, Montreal

16: 1165-1300 (Oct.) 1926

Abdominal Emergency. G. H. Murphy, Halifax.—p. 1165.
Goiter: Prevention. W. D. Keith, Vancouver, B. C.—p. 1171.
Id.: Medical Aspect. A. H. Gordon, Montreal.—p. 1176.
Id.: From Radiologist's Viewpoint. W. H. McGuffin, Calgary, Alberta.—p. 1182.
Id.: Surgical Treatment. G. S. Fahrni, Winnipeg.—p. 1188.
Certain Grooves on Deep Aspect of Cranial Vault. I. M. Thompson, Montreal.—p. 1194.
*Physical Examination and Determination of Basal Metabolic Rates of Young Adults. A. T. Cameron, H. D. Kitchen and D. F. McRae, Winnipeg.—p. 1201.
*Treatment of Laryngeal Tuberculosis in Sanatoriums. C. D. Parfitt, Gravenhurst, Ont.—p. 1206.
Value of Parallel Kolmer and Kahn Tests as Standardized Laboratory Procedure in Serum Diagnosis of Syphilis. C. M. Anderson, Toronto.—p. 1211.
*Tubercle Bacillus in Etiology of Ischiorectal Abscess and Fistula in Ano. G. L. Leslie, River Glade, N. B.—p. 1215.
*Hemolytic Jaundice in New-Born. R. R. Struthers, Montreal.—p. 1221.
Abdominal Pain in Children in Extra-Abdominal Conditions. A. Goldbloom, Montreal.—p. 1223.
Breech Extraction as Cause of Cord Laceration and Paraplegia. L. M. Lindsay, Montreal.—p. 1228.
Diagnosis of Common Skin Conditions. G. G. Campbell, Montreal.—p. 1230.
Infective Arthritides. Possible Relationship Between Hypoparathyroidism and Chronic Arthritides. A. M. Forbes, Montreal.—p. 1232.
Social Aspects of Mental Deficiency. C. B. Farrar, Toronto.—p. 1233.
*Medical Treatment of Chronic Gastric and Duodenal Ulcers. D. H. Arnott, London, Ont.—p. 1238.
Evolution of Man's Diet. U. Gareau, Regina, Sask.—p. 1241.
Needle in Cervical Region for Five Months. J. N. Roy, Montreal.—p. 1243.
Lymphoblastoma. A. T. Henderson, Montreal.—p. 1245.

Physical Examination of Young Adults.—The results are detailed by Cameron, Kitchen and McRae of a physical examination of a moderately large group of young adults. The most frequently occurring abnormality was slight thyroid enlargement. Adamson's contention that blood pressure readings should be made under "basal" conditions, if definite conclusions are to be drawn, receives support. The basal metabolism figures of 110 normal males and fifty-seven normal females of ages varying from 18 to 32 years are in agreement with the Du Bois and Benedict standards. The "Sanborn" tables at present in use are about 5 per cent too high for adults of these ages and may lead to error if employed clinically. Read's formula for calculation of the basal metabolic rate from pulse pressure and pulse rate has been tested with a group of normal and pathologic individuals, and the results do not justify the use of this formula clinically.

Treatment of Laryngeal Tuberculosis in Sanatorium.—Parfitt says that in the sanatorium, laryngeal tuberculosis has not proved fatal in cases which otherwise had a favorable prognosis. It has been the least dangerous complication of pulmonary tuberculosis and the one most amenable to treatment. It has often been arrested or cured before the patient had recovered from the pulmonary disease. Even in patients entering with advanced laryngeal lesions and bad prognosis, relative comfort can frequently be given by active measures.

Tubercle Bacillus as Cause of Ischiorectal Abscess.—Evidence is presented by Leslie to indicate that fistulas in patients with active phthisis are nearly always tuberculous. Guinea-pig inoculation is the most reliable diagnostic method and has yielded positive diagnosis in at least 20 per cent of all cases. The incidence of abscess and fistula in tuberculous patients is from 2 to 3 per cent. It is Leslie's opinion that the tubercle bacillus is the largest single etiologic factor, and that 20 per cent does not represent the true relationship. The roentgen ray is of very definite therapeutic value.

Hemolytic Jaundice in New-Born.—There was no familial history of jaundice in Struthers' case. The child when born breathed spontaneously, and presented no abnormality other than an apparent pallor. The next morning the child was intensely jaundiced. The nurse in charge stated that the child had shown the same jaundice when being carried from the delivery room of the hospital to the nursery, a short time after birth. At the age of 36 hours the baby was quite jaundiced, but appeared otherwise well. It nursed vigorously, cried but little, was afebrile, and took fluids well by mouth. The red blood cells showed 60 per cent normoblasts, 8 per cent megaloblasts and some free nuclei. The white cells showed no striking features. Faint reticulation was observed in a few cells by vital stain. However, increased fragility of the red blood cells to hypotonic saline solutions was found, complete hemolysis being noted at 0.40 per cent. The bleeding time was not estimated, but was noted to be prolonged. Examination of the stool gave a positive test for blood, though none was found in the urine, which was a rather brick red and contained bile salts. Urobilinogen was present in greatly increased amount. The infant was given 10 cc. of the father's blood intramuscularly into each buttock, and subcutaneous injections of saline solution. The breast nursing was continued. There were no further hemorrhages or unusual events until the seventh day, and no change in the depth of the jaundice. On the eighth day of life there was slight oozing about the umbilicus at the skin margin, and some small ecchymotic spots on the body and extremities, toes, heels, forearms and back particularly. Next day, the oozing about the umbilicus had become more marked and was uncontrollable, and a large ecchymosis appeared on the hard palate. Whole blood and hemostatic serum were given intramuscularly and calcium by mouth, and the hemorrhage from the umbilicus was controlled by transfixing the stump with bayonet needles and ligating tightly behind them. On the ninth day seeping of blood from the various puncture wounds was noted. The child did not nurse as well as formerly and appeared somewhat exsanguinated. A second examination of the blood revealed: red blood cells, 2,000,000; white blood cells, 16,800; hemoglobin, 26 per cent, and many nucleated red cells, 50 per cent of the red cells showing reticulation and markedly increased fragility. Hemolysis began at 0.65 per cent and was complete at 0.45 per cent. Examination of the white cells showed many immature myeloid forms. The blood platelets numbered 162,000 per

cubic centimeter, and were irregular in size and shape. The bleeding time, though not estimated, was tremendously prolonged. A transfusion was attempted which was only partially successful, only 50 cc. of citrated mother's blood being introduced, and the child died shortly afterward. All the wounds produced in the administration of blood, saline solution and serum, and the umbilical stump were oozing bloody serum before death occurred. The main anatomic features found at necropsy were intense jaundice of all tissues, enlargement of the spleen, a slight increase of the amount of pericardial fluid, a soft "stone" composed of inspissated bile and amorphous crystals found in the gallbladder and the absence of obstruction or abnormality in the biliary system, including the hepatic, cystic and common bile ducts and ampulla of Vater.

Medical Treatment of Peptic Ulcer.—Arnott gives two meals a day, a carefully prepared but not greatly restricted diet, and medication with bismuth subnitrate, rhubarb, cascara and magnesia in spirit of chloroform and water.

Illinois Medical Journal, Oak Park

50: 265-352 (Oct.) 1926

*Radon (Radium Emanation) in Treatment of Intra-Oral Cancer. F. E. Simpson and R. E. Flesher, Chicago.—p. 305.
When Doctor Dies, What Does He Have to Sell? E. Keating, Chicago.—p. 309.
Relation of Dentist to Public Health. W. F. Whalen, Peoria, Ill.—p. 314.
Fallacious Orifice—Value of Cautery Punch Operation. J. R. Caulk, St. Louis.—p. 317.
Preservation and Restoration of Function Following Injuries to Extremities. E. C. Holmblad, Chicago.—p. 327.
Drugs and Malaria in Treatment of Neurosyphilis. J. T. Nerancy, Jacksonville.—p. 330.
Chronic Suppurative Otitis Media. O. J. Nothenberg, Chicago.—p. 337.
Physician and Pharmacist. A. L. Lash, Chicago.—p. 341.
Excerpts from Literature Illustrative of Popular Distrust of Medical Profession. E. Podolsky, Boston.—p. 342.
Prolapse of Rectum in Children. W. R. Rainey, St. Louis.—p. 345.

Radon Treatment of Cancer of Mouth.—Simpson and Flesher have treated with radon 141 unselected cases of intra-oral squamous cell epithelioma. They report the results in fifty-six unselected cases which were treated during a period of three years prior to Dec. 31, 1922. The clinical diagnosis in each of these cases was confirmed microscopically. The end results are known in thirty-nine cases. In twenty-one of these cases there were definitely palpable lymph nodes in the neck at the time of treatment, while in eighteen cases no nodes were found. Of the eighteen patients without nodes, forteen are living; four have been well for more than five years, five for more than four years, and five for more than three years. Four patients are dead. One of these lived for nearly two years and three lived for more than three years after the treatment. All four died of recurrence. Of the twenty-one patients with nodes, two are living, one having been well for more than five years and the other for more than four years. The duration of life after treatment of nineteen patients who have died varied from four months to three years, the average duration being 16.4 months. Of the nine patients with cancer of the tongue, four are living. These four have been well for five years, four years, three and one-half years and three years, respectively. Of the five who died, two were free of cancer at the time of their death, one having been well for four and one-half years and the other one and one-half years. Assuming that the seventeen untraced patients are dead, the total mortality is 63.3 per cent; twenty out of fifty-six patients have been well for periods of from three to five years. The authors assert that for the best results in intra-oral cancer, at least 1,000 millicuries of radon must be available, while experience in its use would appear to be necessary.

Journal of Bacteriology, Baltimore

12: 243-301 (Oct.) 1926

Growth of Spore-Forming Anaerobes at 50 C. F. E. Greer, Chicago.—p. 243.
Bacteriophage in Relation to Salmonella Pullora Infection in Domestic Fowl. N. J. Pyle, Amherst, Mass.—p. 245.
Influence of Sodium Chloride on Colorimetric Determination of *p*H. L. B. Parsons and W. F. Douglas, Omaha.—p. 263.
Conductivity as Applied to Studies of Bacterial Metabolism: II. L. B. Parsons and W. S. Sturges, Omaha.—p. 267.
Method of Staining Bacterial Flagella. P. H. H. Gray, Harpenden, England.—p. 273.
Rôle of Starch in Cracking of Chocolate Creams. B. G. Philbrick, Boston.—p. 275.
Microbic Heredity: VIII. Infectivity and Virulence of Filtrable Phase in Life History of B. Fusiformis and Related Organisms. R. R. Mellon, Rochester, N. Y.—p. 279.

Journal of Biological Chemistry, Baltimore

70: 285-598 (Oct.) 1926

Fat and Glycogen in Tissues in Experimentally Induced Obesity in Rat. G. L. Foster and C. D. Benninghoven, Berkeley, Calif.—p. 285.
*Ammonia and Blood Sugar. A. A. Horvath, Peking.—p. 289.
Relation Between Peroxidation and Antirachitic Vitamin. L. Yoder, Ames, Iowa.—p. 297.
Effect of Molecular Complexity on End-Products Formed by Clostridium Thermocellum. W. H. Peterson, E. B. Fred and E. A. Marten, Madison, Wis.—p. 309.
Graphical Interpretation of Electrometric Titration Data by Use of Comparison Curves. H. S. Simms and P. A. Levene, New York.—p. 319.
Nucleic Acid Structure as Determined by Electrometric Titration Data. P. A. Levene and H. S. Simms, New York.—p. 327.
Diacetone Glucose: III. Methylated Methyl Glucosides Prepared from Monoacetone Glucose. P. A. Levene and G. M. Meyer, New York.—p. 343.
Substitution by Halogen of Hydroxyl in Secondary Alcohols. P. A. Levene and L. A. Mikeska, New York.—p. 355.
Oxidation of Mercaptans and Thio Acids to Corresponding Sulfonic Acids. P. A. Levene and L. A. Mikeska, New York.—p. 365.
Liability of Sulphur in Cystine Derivatives and Its Possible Bearing on Constitution of Insulin. E. Brand and M. Sandberg, New York.—p. 381.
*Origin of Glycuronic Acid in Organism. A. J. Quick, Philadelphia.—p. 397.
*Sugar in Urine and in Blood. O. Folin and A. Svedberg, Boston.—p. 405.
Osmotic Pressure of Hemoglobin and of Base Bound by Hemoglobin. J. H. Austin, F. W. Sunderman and J. G. Camack, Philadelphia.—p. 427.
*Experimental Rickets: XXVII. Butter Fat. E. V. McCollum, N. Simmonds, J. E. Becker and P. G. Shipley, Baltimore.—p. 437.
Chemical Study of Bacteria: XII. Albumin-Globulin Fraction of Tubercle Bacillus. R. D. Coghill, New Haven, Conn.—p. 439.
Id.: XIII. Alkali-Soluble Protein of Tubercle Bacillus. R. D. Coghill, New Haven, Conn.—p. 449.
Presence of Amines in Distillate from Kjeldahl-Gunning Nitrogen Determinations: Preliminary Paper. R. A. Gortner and W. F. Hoffman, St. Paul.—p. 457.
Detoxication of Aromatic Cyanides. M. Adeline, L. R. Cerecedo and C. P. Sherwin, New York.—p. 461.
Relation of Iron from Various Sources to Nutritional Anemia. H. S. Mitchell and L. Schmidt, Battle Creek, Mich.—p. 471.
Colorimetric Method for Determination of Acetone Bodies in Blood and Urine. J. A. Behre and S. R. Benedict, New York.—p. 487.
*Nutritive Value of Inorganic Substances: I. Normal Zinc Metabolism with Particular Reference to Calcium Metabolism. L. T. Fairhall, Boston.—p. 495.
*Blood Changes in Acute Mercuric Chloride Poisoning. J. M. Looney, Towson, Md.—p. 513.
Pentose Metabolism: I. Disposal of Intravenously Administered Xylose in Rabbit. R. C. Corley, New Orleans.—p. 521.
Nitrogen Metabolism in Chick Embryo. C. H. Fiske and E. A. Boyden, Boston.—p. 535.
*Fate of Sugar in Animal Body: II. Relation Between Sugar Oxidation and Glycogen Formation in Normal and Insulinized Rats During Absorption of Glucose. C. F. Cori and G. T. Cori, Buffalo.—p. 557.
*Id.: III. Rate of Glycogen Formation in Liver of Normal and Insulinized Rats During Absorption of Glucose, Fructose and Galactose. C. F. Cori, Buffalo.—p. 577.
Potassium in Animal Nutrition: IV. Potassium Requirements for Normal Growth and Maintenance. H. G. Miller, Corvallis, Ore.—p. 587.
Id.: V. Influence of Potassium on Urinary and Fecal Excretion of Sodium, Chlorine, Calcium and Phosphorus. H. G. Miller, Corvallis, Ore.—p. 593.

Ammonia and Blood Sugar.—Horvath says that hyperglycemia may be considered as a means of protection against increases in ammonia in the blood. This forms a basis for the use of glucose in cases of ammonia intoxication. The blood sugar level may be partly regulated by ammonia.

Origin of Glycuronic Acid.—Quick presents evidence which indicates that the organism can produce glycuronic acid from carbohydrate. The production of hippuric acid in the dog is markedly reduced by the administration of large quantities of glucose with the benzoic acid.

Estimating Sugar in Urine.—A revised form of Folin's copper method for the determination of sugar in normal urine is described by Folin and Svedberg. A simple, convenient and dependable fermentation method for the determination

of sugar in blood is also described. Experimental evidence is given showing that the blood sugar contains fermentable sugar other than glucose. A preliminary description is given of another class of alkaline copper reagents which are reduced by the ordinary nitrogenous products, with distinct reducing properties, but are unaffected by reducing sugars.

Experimental Rickets:. Butter Fat.—McCollum, Simmonds, Becker and Shipley point out the necessity of keeping the butter fat content of the diet as low as possible, since this may in certain cases be a disturbing factor. Animals receiving 1 per cent and 2 per cent, respectively, of butter fat developed very severe rickets.

Normal Zinc Metabolism.—The zinc metabolism of rats has been investigated by Fairhall and compared with their calcium metabolism under various conditions. Under conditions of alkaline feeding, both urinary and fecal zinc excretion are at first increased and the balance becomes negative, followed by a return to normal. Similarly, under an acid regimen both urinary and fecal zinc excretion are increased, the balance becomes negative, but remains so until the animals are returned to a normal diet. The utilization of zinc by the rat is about 1 per cent and the amount circulating in the blood stream is about 7 per cent of the calcium involved in each case. The rate of storage of zinc, as is the case with calcium, is greatest in the young growing animal.

Blood Changes in Mercuric Chloride Poisoning.—The blood changes resulting from poisoning with from 4 to 4½ grains (0.25 to 0.30 Gm.) of mercuric chloride have been followed by Looney. During the period of coma the undetermined nitrogen showed a very marked increase, and the amount of creatine exceeded that of creatinine. The amino-acid nitrogen and the uric acid did not increase in proportion to the rise in the other nitrogenous constituents.

Fate of Sugar in Body.—It is concluded by the Coris that an excess of insulin leads to an increased sugar oxidation. Glucose oxidation and glycogen formation accounted for 90 per cent of the sugar absorbed during four hours in both normal and insulinized animals.

Rôle of Liver in Carbohydrate Metabolism.—Cori states that the rôle of the liver in the carbohydrate metabolism of the whole body could be measured quantitatively by calculating the percentage of the total amount of sugar absorbed that is retained as liver glycogen. The maximum retention occurred in four hours, and amounted to 17 per cent in the cases of glucose and to 39 per cent in the case of fructose.

Journal of Nervous and Mental Disease, New York

64: 321-432 (Oct.) 1926

*Bladder Disturbances in Lesions of Nervous System. I. L. Meyers, Los Angeles.—p. 321.
Psychoses in Criminals: Psychopathology of Crime. B. Karpman, Washington, D. C.—p. 331. (To be cont'd.)
*Psychosis as Early Sign of Epidemic Encephalitis. J. Kasanin and J. N. Petersen, Boston.—p. 352.
Astereognosis. A. Gordon, Philadelphia.—p. 359.
Postencephalitic Respiratory Disorders. S. E. Jelliffe, New York.—p. 362.

Bladder Disturbances in Lesions of Nervous System.—Retention of urine or, in the case of less severe conditions, its minor manifestations, namely, straining at urination and frequency of urination, constitute the initial type of bladder disturbance that occurs in all lesions of the spinal cord when the seat of the lesion is above the conus. Meyers proposes the view that the bladder disturbance in such cases is brought about by the destruction of the fiber tracts which form the vesical pathways on their way to and from the cerebrum. These tracts appear to offer a good deal of resistance to a slowly developing destructive process (inflammation, softening or neoplasm), and the bladder disturbance in such conditions is generally a late symptom. In lesions of the conus or of the cauda equina, retention of urine is the initial type of bladder disturbance when the lesion, in addition to causing paralysis of the pelvic autonomic nervous system, involves the posterior horns or posterior roots, but does not involve the motor nuclei or anterior roots of the internal pudic, in which case there is no flaccid paralysis of the musculature of the perineum. Lesions of the conus or cauda equina that are, on the other hand, associated from the outset with, respectively, an involvement of the motor nuclei of the internal pudic or of its anterior roots, and a flaccid paralysis of the muscles of the perineum, may have passive incontinence as the earliest manifestation of disturbance of bladder function. The retention, whether the result of a lesion of the spinal cord, conus or cauda equina, may or may not be associated with incontinence of overflow. Retention of urine, or incontinence of urine, is generally one of the earliest manifestations of tabes dorsalis, the proportion of cases in which either type of these disturbances occurs being about equal. The retention is the result of failure of the expulsive power of the bladder, owing to the paralysis of the pelvic autonomic nervous system and the detrusor muscle, the escape of urine by gravity being prevented by the mechanical action of the musculature of the perineum which keeps the urethra firmly compressed, and is not due to overaction by the internal or external sphincter, an overaction which cannot occur in tabes dorsalis or in complete transverse lesion of the cord, a lesion which is associated with complete loss of reflex action below the level of the lesion. In complete transverse lesion of the cord it may be assumed that the sympathetic nervous system of the bladder is paralyzed simultaneously with the pelvic autonomic nervous system, and does not function independently of the cord by virtue of its ganglions in the mesenteric plexus. Such paralysis is undoubtedly associated with the relaxation of the internal sphincter and probably hastens the development of incontinence. It does not, however, prevent the urine from accumulating in the bladder so long as the musculature of the perineum is of good volume, the pelvic floor is taut, and the urethra, as a result, is firmly compressed.

Psychosis in Epidemic Encephalitis.—Four cases of epidemic encephalitis are reported by Kasanin and Petersen in which a psychosis was the earliest clinical picture, while the neurologic signs developed later. It is suggested that a thorough review of some of the early histories of atypical cases of schizophrenia or affective disorders may reveal a previous encephalitis.

Laryngoscope, St. Louis

36: 701-778 (Oct.) 1926

Cooperation and Interference of Reflexes from Other Sense Organs with Those of Labyrinths. R. Magnus, Utrecht, Holland.—p. 701.
Ablation Experiments on Labyrinth of Frogs. J. Tait, Montreal.—p. 713.
Relation of Tactile Impression and Hearing Perception. M. A. Goldstein, St. Louis.—p. 729.
Thrombosis of Lateral and Cavernous Sinuses, Complicating Acute Mastoiditis: Two Cases: One Involving Cavernous Sinus as Well as Lateral Sinus. E. G. Gill, Roanoke, Va.—p. 747.
Molt and Storz Modification of Tonsil Guillotine. W. F. Molt, Indianapolis.—p. 751.
Scirrhus Carcinoma of Throat. W. R. Watson, Philadelphia.—p. 753.
Injection of Recurrent Laryngeal Nerve in Tuberculosis of Larynx. H. P. Schugt, New York.—p. 756.

Maine Medical Association Journal, Portland

17: 151-167 (Sept.) 1926

Treatment of Cervical Cancer by Radium Emanation. J. Muir, New York.—p. 151.
Actinotherapy with Quartz Light. C. E. Cook, Jr., Calais, Me.—p. 160.

Northwest Medicine, Seattle, Wash.

25: 515-572 (Oct.) 1926

Medical Problems in Idaho. N. R. Wallentine, Sandpoint, Iowa.—p. 515.
Cesarean Section at Johns Hopkins Hospital. J. W. Williams, Baltimore.—p. 519.
*Limitations for Cesarean Operation. A. B. Spalding, San Francisco.—p. 526.
Interrelationship Between Pathologic Conditions of Mother and Offspring. F. L. Adair, Minneapolis.—p. 531.
Maternal Mortality. H. H. Kretzler, Edmonds, Wash.—p. 535.
Persistent Occiput Posterior: Treatment by Kielland's Forceps. T. Torland, Seattle.—p. 538.
*Gwathmey's Synergistic Analgesia in Obstetrics. P. E. Spangler, Portland, Ore.—p. 541.
Uterine Hemorrhages. H. Schmitz, Chicago.—p. 543.
Ectopic Pregnancy Diagnosed as Acute Salpingitis. G. C. Schauffler, Portland, Ore.—p. 553.
Tuberculous Conditions of Genito-Urinary Tract. G. I. Birchfield, Seattle.—p. 555.
Case of Acute Yellow Atrophy of Liver. K. Winslow, Seattle.—p. 556.
Bee Sting Treatment (Epinephrine). W. R. Jones, Seattle.—p. 557.
Herniated Gangrenous Appendicitis Simulating Inguinal Hernia. F. W. Milburn, Reardan, Wash.—p. 558.

Limitations for Cesarean Section.—In spite of all that has been said against cesarean section, Spalding says that when properly indicated it is so valuable an obstetric procedure that the man in general practice must always keep in mind the imperative demands of the family or consultant, and so conduct labor that the operation can never be absolutely contraindicated. While the usual high midline cesarean section is easy for a general surgeon to perform, he should never be called in consultation unless he has had good obstetric training and has obstetric judgment. The technic of the low cesarean section requires some special training to perform properly, and the judgment needed to decide when the operation is properly indicated is obtained only by fairly extensive obstetric experience. It is much less difficult to decide correctly against the operation than to decide correctly for the operation. The man in general practice will be wise if he treats the young primipara conservatively, and permits nature to help him all she can before he casts his cigar away and discards his time honored obstetric state of masterful inactivity.

Synergistic Analgesia in Obstetrics.—Spangler is convinced that those who will use the routine as adopted at the New York Lying-In Hospital will become enthusiastic in its praise. It is common for multiparas who have normal sized babies to require no additional relief at all for the delivery. Primiparas usually require a few drops of ether by inhalation to bring the head over the perineum. Operative procedures always require supplementary anesthesia, but this is very slight in amount, and the transition is smooth and without unpleasantness. However, even if supplementary anesthesia is necessary for the actual delivery, the patient has been relieved of the suffering during labor, and the fear of each successive pain is banished. Failure is due only to technical errors, and with this procedure added to the obstetric armamentarium, suffering during labor is well nigh inexcusable, since the procedure is within the reach of all.

Occupational Therapy and Rehabilitation, Baltimore

5: 329-397 (Oct.) 1926

Physical Exercise and Recreation. C. L. Vaux, New York.—p. 329.
Employment of Handicapped. H. J. Mellum, Kenosha, Wis.—p. 335.
Industrial Rehabilitation of Handicaps in Wisconsin. G. P. Hambrecht, Madison, Wis.—p. 343.
*Music in Medicine. E. W. Grothe, New York.—p. 353.
School-Trained Aid in Hospital. M. R. Spear, Kalamazoo, Mich.—p. 359.
Occupational Therapy in Psychopathic Hospital. E. F. Humphrey, Boston.—p. 367.

Music in Medicine.—The physiologic effects of music, according to Grothe, are many. Metabolism is increased, and there is decreased and increased muscular energy. It produces a marked effect on the volume of the pulse and also on the blood pressure. Fatigue is noticeably reduced, and it will speed up work to such a degree that it will produce a copious flow of perspiration. By the biochemical change of blood, it increases the product and the outpour of epinephrine, which plays such an important part in the defensive mechanism of flight and fight. Singing controls the breath, and also the proper management of its mode of escape through the glottis, mouth and nose. The muscles of the chest and throat have a splendid opportunity to exercise and by thus expanding the lungs, singing is considered a good treatment for all convalescent lung cases. It aids convalescence after a long continued illness, by producing an individual and collective sense of joy and well being, thereby promoting digestion, assimilation and nutrition. Physical exercise with music increases active blood supply, stimulates respiration through emotion, and at the same time relieves the brain of overstimulation caused by mental disturbance. Through the muscular exercise, the cells of the brain that are fatigued through mental disturbances are relieved by diverting the increased blood course to the active organ. It will also prevent atrophy of the motor nerves and build up the muscles. If musical games are used, the patients have an opportunity to release all the activities of their ancestors; their every mood and movement is instinct with heredity. This surplus energy can be directed to have for its aim the education or reeducation of the individual. The relation of music to medicine is also therapeutic for the mind. A patient listening to music can be relieved of pain, fear, terror, grief, rage and in its place there will initiate and energize joy, love, tenderness, mirth, martial spirit and rhythmic dance. By its effect a certain mood takes possession of him, his mind undergoes a change, of which sentiment is the first, followed by some definite thought. It will arouse such intense emotions that one long ill will have a different outlook on life, and will desire to live to get back to work, to play and be happy.

Rhode Island Medical Journal, Providence

11: 153-168 (Oct.) 1926

Operative Treatment of Fractures. C. L. Scudder, Boston.—p. 153.
Corrective Rhinoplasty. H. E. Blanchard, Providence.—p. 161.

Southern Medical Journal, Birmingham, Ala.

19: 715-770 (Oct.) 1926

Clinical Value of Cholecystography in Gallbladder Disease. A. L. Levin, New Orleans.—p. 715.
*Lowered Metabolic Rates in Young Women. P. S. Smith, Abingdon, Va.—p. 718.
*Study of Fifty South Florida Children, Showing Chronic Gastro-Intestinal Symptoms. M. Smith, Orlando, Fla.—p. 723.
*Splenomegaly of Gaucher Type. W. W. Harper, Selma, Ala.—p. 726.
*Alimentary Anemia in Infancy. C. M. Pounders, Oklahoma City.—p. 727.
Roentgenologic Study of Some Malignant Bone Tumors. J. B. Johnson, Galveston, Texas.—p. 730.
Nonspecific Protein Therapy in Dermatology. E. R. Hall, Memphis, Tenn.—p. 731.
Heliotherapy. S. R. Edwards, Miami Beach, Fla.—p. 735.
Difficulties and Superstitions Encountered in Practice Among Negroes. S. W. Douglas, Eudora, Ark.—p. 736.
Financing Full-Time Health Departments. C. A. Kane, Richmond, Va.—p. 739.
*County Health Work in Oklahoma. D. T. Bowden, Oklahoma City.—p. 742.
Cause and Treatment of Ununited Fractures. M. S. Henderson, Rochester, Minn.—p. 746.
Bilateral Fracture of Patella. R. J. White, Fort Worth.—p. 750.
Mixed Tumors of Parotid Gland. L. W. Grove, Atlanta.—p. 752.
Placenta Praevia. E. P. Allen, Oklahoma City.—p. 755.
Dystocia Due to Fusion of Coccyx to Sacrum with Malposition. W. H. Slaughter, Ellis Island, N. Y.—p. 759.
Suprapubic Prostatectomy. M. L. Boyd, Atlanta, Ga.—p. 759.
Case of Umbilical Hernia. F. R. Crawford, Kashing, China.—p. 761.

Lowered Metabolism in Girls.—In young women and girls diffuse colloid ("adolescent") goiter is frequently associated with lowered metabolism. Twelve cases in young women between 14 and 25 are reported by Smith. He says that the clinical syndrome presented by such patients often cannot be recognized accurately, or differentiated from toxic goiter, without resort to metabolimetry. Thyroid extract in such cases is frequently as specific as in the more characteristic types of myxedema.

Cause of Gastro-Intestinal Disturbances in Children.—A study made by Smith of fifty children complaining of chronic gastro-intestinal symptoms showed that 84 per cent suffer from improper selection and combination of food; 70 per cent have decayed teeth; 13 per cent have duodenal ulcer, and appendicitis; gastric dilatation and colon stasis are fairly common ailments of children within the ages mentioned.

Splenomegaly of Gaucher Type, Splenectomy.—Harper removed the spleen from an infant, aged about 18 months, who had splenomegaly. Four months after operation, the blood picture was normal. A brother of the patient died from spastic paralysis with an enlarged spleen which lasted for two years.

Alimentary Anemia in Infancy.—Pounders' patient, aged 19 months, was one of twins. She had been fed on condensed milk because the mother suffered from nephritis. He says that infants born under such conditions should be regarded as potential cases of anemia, and early treatment should be instituted. He favors the use of the ultraviolet ray.

County Health Work in Oklahoma.—Out of the seventy-seven counties in Oklahoma, seven are served by full-time health units. Bowden reports that sixty-seven have part-time officers, and three are without regularly appointed county superintendents of health.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian Journal of Experimental Biology and Medical Science, Adelaide

3: 115-191 (Sept. 16) 1926

Action of Carbonic Acid on Hemoglobin. W. A. Osborne.—p. 117.
*Acute Encephalitis (X-Disease) at Broken Hill: Probable Successful Transmission to Sheep. J. L. M. Kneebone and J. B. Cleland.—p. 119.
*Milk of Australian Women. H. S. H. Wardlaw and E. E. P. Dart.—p. 129.
*Mitochondria. E. S. Horning.—p. 149.
Structure of Spinal Cord. O. W. Tiegs.—p. 161.
Variations in Urease Content of Different Varieties of Soya Bean (Glycine Hispida). E. M. Hindmarsh.—p. 167.
Electrolytic Preparation of Calomel for Use in Calomel Electrode. S. W. Pennycuick and R. J. Best.—p. 173.
Action of Certain Fat-Solvents on Alcoholic Fermentation. N. G. Kerr and W. J. Young.—p. 177.
Action of Ether on Yeast Cell: I. Carboxylase. N. G. Kerr and W. J. Young.—p. 187.
Convenient Hydrogen Electrode. J. M. Lewis.—p. 189.

Acute Encephalitis (X Disease).—Cases of a form of acute encephalitis, occurring in the late summer in a dry, hot climate, are reported by Kneebone and Cleland. The mortality was high. The disease appears to have been conveyed to sheep by intracerebral inoculation from a human case, and transmitted to two other sheep in series. Microscopic lesions in the human brains were slight, and in the case from which the sheep were inoculated only congestion has been detected. As in previous reports, a sheep found refractory to a first inoculation has proved refractory to a second. The results obtained support the view that this disease is a distinct entity, unless further and repeated attempts to convey the virus of ordinary acute poliencephalitis to sheep eventually yield positive results.

Analysis of Milk of Australian Women.—Specimens of the milk of Australian women were examined by Wardlaw and Dart. The modal values for the composition and certain properties of the milk obtained between the first and ninth months of lactation are as follows: depression of the freezing point, 0.583 C.; lactose, 6.45 per cent; specific gravity, 1.0296; protein, 1.40 per cent; ash, 0.19 per cent; fat, 5.30 per cent. These figures are in ascending order of the variability or dispersion of the quantities, which range from 0.0052 for the depression of the freezing point to 0.195 for the percentage of fat. The average percentages of protein and of ash, and the depression of the freezing point, show a slight fall as lactation continues. The average percentage of lactose shows a slight rise. The milk of the younger women is on the average distinctly richer in fat than that of the older women. The average volume of milk obtained from the breast varies in the opposite direction with age. The average percentage of ash is slightly greater in the milk of the younger women, while the average percentage of lactose varies in the opposite direction. The milk of the women between the ages of 22 and 27 has a distinctly greater average of depression of freezing point and a smaller average percentage of protein than in other age groups. The average volume of milk obtained from the breast increases with the number of lactations up to the fourth. The average percentage of fat decreases, so that the average weight of fat obtained remains constant.

Mitochondria.—Observations are reported by Horning concerning mitochondria of certain protozoa. A dyestuff (sodium salt of diethyl safranine monocarboxylic acid), formed from janus green by hydrolysis of the nitrile, was found to be selectively absorbed by mitochondria. Several bacteria have been tested with this substance, but they do not show a corresponding selective absorption. Observations have been made in living amebas on the relation of mitochondria to the process of intracellular digestion. The engulfed food circulates in the protoplasm, and mitochondria come into direct contact with it; they adhere to the food, and finally a vacuole is secreted around the food, with its adhering mitochondria. The mitochondria slowly dissolve, and the food undergoes disintegration. The vacuole slowly decreases in size, thus indicating an absorption of the digested food. It is concluded that the mitochondria, which are believed to be of an enzymatic nature, have brought about the digestion of the food.

British Journal of Anesthesia, Manchester

4: 69-112 (Oct.) 1926

Choice of Anesthetic. W. Webster.—p. 77.
*Influence of Diathermy in Anesthesia on Body Temperature, Blood Concentration and Acidosis. W. Bourne.—p. 87.
Carbon Dioxide in Gas and Oxygen Anesthesia. J. R. Mackenzie.—p. 92.
Those Who Worked in Dawn of Anesthesia. C. W. Long.—p. 100.
Improved Junker's Inhaler. H. G. Dodd.—p. 108.
Ether Inhaler. R. Schaffer.—p. 109.

Diathermy, Anesthesia and Body Temperature.—Bourne asserts that the preliminary use of diathermy will prevent the drop in temperature which ordinarily occurs as the result of the administration of an anesthetic.

British Journal of Dermatology and Syphilis, London

38: 371-424 (Oct.) 1926

Self-Inflicted Hysterical Lesions of Skin, with Special Reference to After-History. H. Maccormac.—p. 371.
*Chloracetic Acids: Biochemical Study. H. L. Roberts.—p. 375.

Uses of Trichloracetic Acid.—Roberts discusses the clinical uses of trichloracetic acid. To the clinician it is said to be of value as one of the most delicate tests for albumin in the urine. A 10 per cent solution should be used. Proteoses and peptones are precipitated, but the removal is not complete. The precipitate clears up on heating, to reappear on cooling, by which the proteoses and peptones can be distinguished from albumins and globulins. The peculiar therapeutic action of trichloracetic acid on rodent ulcer and other epithelial growths is distinguished by solidification of the cell contents, with inhibition of leukocytes and water transudation.

British Journal of Tuberculosis, London

20: 145-191 (Oct.) 1926

*Tuberculosis Work in Glasgow. A. S. M. Macgregor.—p. 145.
Mediastinal Bulging in Artificial Pneumothorax. S. V. Pearson.—p. 153.
Employment of Consumptive. J. Watt.—p. 157.
Impression of Glasgow Conference of National Association for Prevention of Tuberculosis. J. Guy.—p. 161.

Tuberculosis Work in Glasgow.—Macgregor gives a brief account of the development and scope of the Glasgow Tuberculosis scheme. The death rate from pulmonary tuberculosis in Glasgow in 1925 was the lowest recorded, being 0.9 per thousand of population. This rate has continuously declined since 1870, when it was almost 4 per thousand persons. The death rate from nonpulmonary tuberculosis has suffered a similar reduction, especially since the beginning of the century.

British Medical Journal, London

2: 671-718 (Oct. 16) 1926

Recent Developments in Our Knowledge of Biliary Tract: I. E. A. Graham.—p. 671.
Id.: Diagnosis and Treatment of Cholecystitis and Prevention of Gallstones. A. F. Hurst.—p. 676.
*Changed Reaction to Tuberculin. R. Carswell.—p. 682.
*Heart Disease in Children. G. A. Stephens.—p. 684.
*Gas Gangrene in Labor. H. E. Thorn.—p. 685.
*General Paralysis Associated with Benign Tertian Malaria. G. T. Baker.—p. 685.
Functional Hemoglobinuria. C. M. Finny.—p. 685.
Case of Mikulicz's Disease. G. B. Egerton.—p. 686.

Changed Reaction to Tuberculin.—In the literature of tuberculin, comparative charts of the reaction before and after treatment are said to be rare; indeed, says Carswell, specimens of negative charts alone are not common, owing no doubt to the widespread prevalence of latent tuberculosis, making it comparatively uncommon to obtain negative reactions in practice. If it can be shown that a positive general reaction can be converted by specific treatment into a negative reaction, after a sufficient interval of time has been allowed to elapse to eliminate the immediate effect of tuberculin immunity, an important step will have been taken toward an evaluation of the tuberculin test comparable to that of the Wassermann test in syphilis, and the diagnosis and treatment of tuberculosis will become practicable in the very earliest

stage of all—that of infection with minimum pathologic changes. The three cases cited by Carswell are said to point in this direction. In the first case, it seems fairly clear that the specific treatment was responsible for the conversion of a positive to a negative reaction. In the second, immunization was only carried to 0.4 cc. bacillary emulsion (2 mg. bacillary substance); and in the third, which was carried to 4 cc. (20 mg.), two years elapsed between the first positive test and the two subsequent negative tests. Carswell insists that a positive general tuberculin test is a matter of very great practical importance as it is capable of revealing disease at a time when it can be comparatively easily dealt with, and when specific treatment with large doses of tuberculin is easy, safe and effective.

Heart Disease in Children.—The results of an investigation into one series of thirty cases of heart disease in children are given by Stephens: There was among these children a marked liking for acids, especially vinegar, amounting oftentimes to a perversion of appetite. Together with this partiality for acids, there was in many cases a great dislike for milk. The aggravation of the choreic movements in one case after partaking of acids was very strikingly direct. Puffiness of the gums was also a very common factor pointing to a constitutional disturbance closely associated with the alimentary canal. Many of the children were in the habit of biting their nails—a habit indicative of an irritable state of the nervous system, and one which might be said to be preliminary to a choreic condition. Of 8,638 other children examined elsewhere, 944 disliked milk, 3,154 were nail biters, 5,469 were acid takers and the gums of 2,392 bled on cleaning.

Gas Gangrene in Labor.—Thorn reports a case of pregnancy in which fetal movements ceased at about four weeks before term. Attempts at induction of labor failed. The baby was born normally at term. The fetal head was soft, the skin was peeling off, and the smell of the child was very offensive. The baby's abdomen was much distended with gas. Its general condition was very disorganized. There was some postpartum hemorrhage. On the fourth day post partum, the mother began to complain of pains in the left buttock, and a small red patch was found at midday. At 8 p. m. on the same day it had spread. Thorn opened it, expecting to find pus, but gas was obtained. The patient died next day. The spore-bearing bacillus gives rise to profuse gas formation in the cultures, and is strictly anaerobic. The organism is one of the gas gangrene type and is a member of either the perfringens or the malignant edema group; its identity is not yet certain. The question is: How did the patient become infected from three to four weeks before full term? The only clue was that her husband had been badly wounded in France during the war, and that some clothes had harbored the spores of these organisms.

General Paralysis Associated with Malaria.—Baker's patient had malaria of long standing and general paralysis developed in spite of this; a further severe relapse of malaria in no way hindered the progress of the cerebral condition to a fatal termination.

Edinburgh Medical Journal

33: 597-644 (Oct.) 1926

*Ossifying Spondylitis. R. Stockman.—p. 597.
*Case of Rat-Bite Fever. G. M. A. Herzfeld and T. J. Mackie.—p. 606.
Case of Retropharyngeal (Tonsillar?) Myxosarcoma. D. M. Greig.—p. 620.
Case of Unilateral Hypertrophy. B. S. Simpson.—p. 623.

Ossifying Spondylitis.—Ten cases of ossifying spondylitis due to various causes are reported by Stockman. All the cases reported showed well marked spondylitis (poker-spine or curved spine), and they all presented to a greater or lesser degree the secondary results of the condition; namely, more or less alteration of the posture and gait, contracture of the chest and loss of thoracic respiration, atrophy of the muscles, and sometimes pains along the course of the spinal nerves. The lesion was never confined to the spinal column, but in every case some of the joints were stiff, and there was always more or less generalized fibrositis. The cases are listed according to etiology as follows: after prolonged muscular rheumatism; from gonorrheal rheumatism; from dysentery; from infective arthritis (rheumatoid arthritis); from chronic lung infection; from injury, and from prolonged immobilization of the spine.

Rat Bite Fever.—In this case, Herzfeld and Mackie demonstrated the causative spirillum, and another organism which exhibited a marked agglutination reaction with the patient's serum with a "rising end-titer." Examination of the blood during a pyrexial phase by appropriate microscopic and experimental methods failed to reveal the spirillum. Similarly, also, the examination of lymph from the local lesion and a patch of the exanthematous eruption proved negative. Gland puncture was not carried out at first, owing to the slight glandular involvement; but at a later stage, when the cervical glands were definitely enlarged, the spirillum was demonstrated by the inoculation of animals with the gland tissue. In this way, though the spirilla were apparently very scanty, the infection was reproduced in guinea-pigs, and the characteristic organism was demonstrated in their blood. It is assumed that the organism isolated by blood culture represented a secondary blood infection in the case. No biologic relationship between this organism and the specific spirillum has been observed. From a study of the biology of the spiral organism demonstrated, its classification with the spirilla as apart from the spirochetes is supported, and in this communication it has been designated *Spirillum minus* according to the nomenclature suggested by Robertson.

Journal of Laryngology and Otology, Edinburgh

41: 637-708 (Oct.) 1926

Perforation of Fenestra Rotunda for Therapeutic Purposes. C. Biehl.—p. 637.
Indications for Opening Labyrinth. R. Leidler.—p. 641.
Treatment of Aural Polypus. W. W. Woodhouse.—p. 647.
Melanoma of Hard Palate. N. Patterson.—p. 650.
*Insulin in Treatment of Diabetic Mastoiditis. J. B. Horgan and J. M. O'Donovan.—p. 660.

Use of Insulin in Diabetic Mastoiditis.—The case reported by Horgan and O'Donovan does not support Seydell's contention that operative intervention might be delayed or dispensed with by the timely use of insulin combined with a proper diet in cases of diabetic mastoiditis. It does show, however, that by such treatment the very grave dangers attending the administration of a general anesthetic and the carrying out of appropriate surgical measures were effectively overcome in this case.

Journal of Obstetrics and Gynæcology of British Empire, Manchester

33: 379-562 (Autumn) 1926

*Influence of Corpus Luteum on Menstruation. B. Whitehouse.—p. 380.
*Causation of Stillbirth and Neonatal Death. C. J. Thomson.—p. 390.
Case of Axial Torsion of Fibromyomatous Uterus. C. Gordon-Watson and W. Shaw.—p. 419.
Case of Fibromyoma of Uterus Undergoing Necrobiosis Complicated by Torsion of Uterus and Impaction of Tumor. A. Walker.—p. 424.
Technic of Cesarean Section. F. J. McCann.—p. 426.
*Case of Ovarian Pregnancy. H. N. Fletcher and H. M. Galt.—p. 431.
Carcinoma Following Posterior Division of Cervix. B. Solomons.—p. 434.
Complete Exstrophy of Bladder with Split Pelvis. V. B. Green-Armytage.—p. 436.
Endometrioma of Ovary and Cornual Adenomyoma After Bilateral Salpingectomy. D. Dougal.—p. 439.
Ring Tetra for Use in Abdominal Operations. D. Dougal.—p. 444.
Obstructed Labor in Case of Uterus Didelphys. J. W. Bride.—p. 446.
*Ascaris Lumbricoides in Fallopian Tube. H. E. Murray.—p. 448.

Influence of Corpus Luteum on Menstruation.—Whitehouse asserts that excision or degeneration of the corpus luteum results in necrosis of the endometrium. Ovulation is not influenced by the corpus luteum but is an index of rhythmic ovarian activity. The liquor folliculi in the human species has no specific function in the sex cycle. Menstruation is the monthly abortion of the developing decidua of an unfertilized ovum and the menstrual discharge is the "lochia" of this abortion. The premenstrual endometrium is the menstrual decidua and is merely a stage in the development of the complete decidua of pregnancy. The premenstrual dilatation of the uterine glands is an artefact produced by the retention of secretion owing to constriction of the ducts by the stroma and, later, by extravasated blood. The development and life of the menstrual decidua are dependent on a hormone elabo-

rated by the corpus luteum. Degeneration of the corpus luteum is normally the result of a "negative phase" produced by death of the ovum with its corona radiata and absorption of its products. The cells of the corona radiata are morphologically identical with the large cells of the corpus luteum. The life of the unfertilized human ovum after rupture of the follicle is approximately fourteen days.

Causes of Stillbirth.—In a series of 102 cases of stillbirth reviewed by Thomson, maternal states were responsible in fifty-nine cases, fetal states in thirty-two cases and placental states in eleven cases. Complications of labor were responsible for twenty cases and maternal syphilis for seventy-five cases; eclampsia and hemorrhage, six cases each, and acute and chronic natural diseases, five cases each. Deformities and congenital defects in the fetus caused eleven cases; prematurity, six cases; pulmonary lesions, nine cases.

Ovarian Pregnancy.—Fletcher and Galt cite the case of a woman, aged 34, who, while at a cricket match, felt shivery and ill, although it was a hot day, and complained of pains across the lower abdomen. From this time onward the patient complained of three symptoms, viz., morning nausea, an occasional sharp spasm of pain passing across the lower abdomen to the left iliac fossa, and a feeling, when the bowels were opened, of some obstruction low down in the rectum, with severe pain as this obstruction was passed. A small tender swelling was palpable in the left posterior fornix. A diagnosis of ectopic gestation was made. On opening the abdomen, a small quantity of blood clot was found in the pelvis. Between the outer half of the left broad ligament and the pelvic colon was a swelling, the size of a small tangerine orange, consisting of a pregnant left ovary, with some clot adhering to it. The ovary was removed, leaving the fallopian tube intact. The uterus was slightly enlarged, the right fallopian tube and ovary were normal. On the upper surface of the left ovary was a hole with ragged edges, from which was slightly protruding a mass of chorionic tissue. No fetus was seen either in the blood clot removed from the pelvis or in the cavity in the ovary. The age of the pregnancy was probably not more than five or six weeks.

Ascaris in Fallopian Tube.—The case reported by Murray is interesting, as it demonstrates the migratory habits of round worms. Although they have penetrated to many parts of the body, the presence of one in a fallopian tube is an extreme rarity.

Lancet, London

2: 735-788 (Oct. 9) 1926

Science of Clinical Medicine. A. Garrod.—p. 735.
Professional Careers. H. Rolleston.—p. 737.
Future Women in Medicine. W. Fletcher.—p. 740.
Doctors and Public. E. G. Little.—p. 742.
"Ex Nihilo Nihil Fit." T. Yeates.—p. 744.
*Rous Sarcoma: I. R. D. Mackenzie and C. F. W. Illingworth.—p. 745.
Surgical Management of Seminal Vesiculitis. A. R. Fraser and L. B. Goldschmidt.—p. 749.
*Perforated Gastric Ulcer with Appendicitis. C. P. G. Wakeley.—p. 752.
Aniline Poisoning. J. Inkster.—p. 752.
Influenzal Encephalitis. H. S. N. Menko.—p. 753.

Rous Sarcoma.—Some of the experiments described by Gye in relation to the Rous chicken sarcoma and other neoplasms have been repeated by Mackenzie and Illingworth. Their experimental results tend to confirm the presence in Rous sarcoma fluid of two causal factors which, individually inert, in combination give rise to tumor growth. One of these factors, the "virus," will survive prolonged incubation, but readily succumbs to exposure to chloroform. The other, the "specific factor," is little affected by chloroform, but is rendered inert after a period of incubation depending on the activity of the particular strain of tumor used. The "virus" of the Rous tumor has been replaced, in a small proportion of experiments, by an agent derived from a mammalian tumor (mouse carcinoma 63). The authors have been unable to replace the "virus" by agents derived from mouse sarcoma 37, certain embryonic or placental tissues, or by "growth-promoting factors" in autolytic fluids. They have also been unable to "subculture" the "virus." Their experiments throw little light on the nature of the two factors involved. They have been unable to transmit mouse sarcoma 37 by injections of a cell-free culture fluid. Incidentally, it has been shown that the malignant cells of 37/S may remain alive under strictly anaerobic conditions for as long as three days.

Perforated Gastric Ulcer with Appendicitis.—Wakeley reports a case of acute appendicitis in which two large concretions had ulcerated through the acutely inflamed walls of the appendix. There was also present a large perforation on the gastric side of the pylorus; it almost admitted the tip of the little finger. The perforation was plugged with a portion of omentum, which was stitched in situ as the condition of the patient did not warrant a gastro-enterostomy being performed. Recovery was uneventful.

2: 789-838 (Oct. 16) 1926

Before and After Operation. B. Moynihan.—p. 789.
Aims and Methods of Health Education. T. Horder.—p. 795.
*Treatment of Anginal Pain and Raised Blood Pressure by Diathermy. J. Hay and P. Ince.—p. 799.
*Iodide Eruption. H. C. Semon.—p. 803.
Intracapsular Operation for Cataract Extraction. G. Hume.—p. 804.
*Rate of Sedimentation of Red Blood Corpuscles in Pulmonary Tuberculosis. R. C. Wingfield and R. Goodman.—p. 805.
Color Tests Suggested for Vitamin A. O. Rosenheim and T. A. Webster.—p. 806.

Diathermy for Anginal Pain.—Hay and Ince have used diathermy in eight cases of anginal pain, with marked hypertension in six, in one of which intermittent claudication was the dominant symptom. The treatment did no harm. There were a few instances in which diathermy produced temporary dizziness and faintness or caused excessive sweating, but these were the most distressing manifestations noted. Nearly every patient expressed himself as feeling considerably better. The three unsatisfactory cases were in females: a syphilitic heart with anginal pain; a menopausal hypertension in which the diathermy caused considerable sweating; an extreme hyperpiesia with dyspnea and general exhaustion as the dominant symptoms. In a number of the patients there was not only an immediate effect on the blood pressure, but this improvement tended to persist for a time. And even if the pressure tends to rise later, the subjective improvement often persists. Apart from the subjective improvement and the alteration in blood pressure, the capacity for effort noticeably increased. Pain and dyspnea were undoubtedly much less readily induced. In other words, the area of cardiac response was greatly increased, and the patients were enabled to live more normal lives.

Iodide Eruption.—Semon's case was one of granulomatous response to potassium iodide. The patient had taken only two doses of a mixture containing 5 grains (0.32 Gm.) of potassium iodide to one-half ounce (15 cc.) of infusion gentian. Therefore, only 10 grains of potassium iodide had been administered. The extensive eruption supervened in three days.

Diagnostic Value of Sedimentation Test in Pulmonary Tuberculosis.—Wingfield and Goodman conclude that the sedimentation test is of no value in the diagnosis of pulmonary tuberculosis. To estimate the value of the sedimentation rate in the prognosis of pulmonary tuberculosis is difficult, but the authors have come to the conclusion that it is of distinct value in cases of pulmonary tuberculosis that have to be treated under conditions when clinical observation is not possible, in the outpatient department, the dispensary, and in private practice. And under these conditions, so simple and quick is the technic involved, the test should prove of great value in making a prognosis.

South African Medical Record, Cape Town

24: 417-436 (Oct. 9) 1926

Calcium Metabolism and Effect on Calcium Blood-Level of Parathyroid and Ovarian Hormones. L. Mirvish.—p. 419.
*Bismuth in Treatment of Yaws. H. Leach.—p. 427.

Bismuth in Treatment of Yaws.—Leach prefers the solution of bismuth and sodium tartrate to the bismuth metal in the treatment of yaws. Fewer injections are required, and the stay in hospital is shortened. It is Leach's practice now to give an injection of bismuth metal in any isolated case that may crop up immediately on the arrival of the patient at the hospital. This is merely because the preparation of such a small quantity of solution as a single dose of bismuth and sodium tartrate represents is very tedious and rather difficult. Further treatment is by the aqueous solution.

Annales de Médecine, Paris

20: 161-335 (Sept.) 1926

*Forms of Myocardiac Infarct. L. Gallavardin and L. Gravier.—p. 161.
Production and Propagation of Cardiac Murmurs. C. Laubry and C. Pezzi.—p. 173.
Clinical Definition of Angina Pectoris. C. Laubry and H. Vadon.—p. 192.
Roentgen-Ray Study of Hilum and Vessels of the Lung. C. Laubry et al.—p. 217.
Syncope and Bradycardia. G. Marchal and P. Trocmé.—p. 248.
Physiologic Action of Certain Cardiac Poisons. J. Walser and L. Deglaude.—p. 288.
Method for Study of Cardiac Cavities. D. Routier and J. Walser.—p. 298.
*Infarct and Hemoptysis with Malignant Endocarditis. E. Rist and J. Rolland.—p. 307.

Clinical Forms of Infarct of the Myocardium.—From a study of twenty-nine cases, in which the diagnosis was confirmed by necropsy, Gallavardin and Gravier distinguish three forms of myocardiac infarct. In the rare acute form, the sudden appearance of the infarct is connected with cardiac insufficiency and phenomena of shock. It may occur in apparently healthy persons or in those with ordinary dyspnea from exertion or with angina pectoris. Death usually follows in a few days. This form is frequently accompanied by gastro-intestinal disturbances or by pain, similar to that in angina pectoris, which fact may be a source of error in diagnosis. The subacute form also starts suddenly, but its course is less rapid. It may be of the cardioplegic type with predominant insufficiency of the left heart, or of cachectic type with progressive loss of strength. In the latent form, the infarct may be revealed only on necropsy, as happened in three of their cases; or it may be complicated by hematopericardium, peripheral embolism or aneurysm of the heart. In one patient, the infarct caused paroxysms of ventricular tachycardia.

Pulmonary Hemorrhage in the Course of Malignant Endocarditis.—Among five cases of streptococcus endocarditis of slow course, exhibiting hemoptysis, Rist and Rolland found an infarct of the lung in only two. Evidently the mechanism of the hemorrhage here consists of something else than obliteration of a vessel. Changes in the blood, as anemia from destruction of red blood corpuscles, or azotemia, observed in two cases, may possibly be able to provoke hemorrhage. The latter may thus be independent of either an infarction or endocarditis of the right heart. Infectious endocarditis with hemorrhage is easily mistaken for pulmonary tuberculosis. Besides this, resorption of the infarcts may lead to formation of cavities simulating cysts.

Bulletin de l'Académie de Médecine, Paris

96: 133-146 (Oct. 19) 1926

Infection of the Bronchi by Spindle-Shaped Spirochetes. H. Vincent.—p. 135.

96: 147-172 (Oct. 26) 1926

*Surgical Treatment of Angina Pectoris. D. Danielopolu.—p. 153.

96: 173-195 (Nov. 2) 1926

Therapeutic Properties of Ossein. E. Maurin.—p. 190.

Method of Surgical Treatment of Angina Pectoris.—Danielopolu gives an illustrated description of his method, which aims at severing most of the cardio-aortic sensory fibers, while respecting the accelerator nerves of the heart and the vasomotors of the coronaries. The operation is done after the usual medical treatment has failed. It is performed in two stages. The first stage consists in resection of the cervical sympathetic cord, leaving the inferior ganglion, followed by severing of the branches of the cervical vagus, which enter the thorax (the depressor included) and the vertebral nerve. With this is associated section of the rami communicantes uniting the first cervical and the first thoracic ganglions with the sixth, seventh and eighth cervical and the first dorsal pairs, also the branch uniting the superior laryngeal with the vagal trunk. The operation is done on the left side. If the results are unsatisfactory, it may be repeated on the other side, or followed by the second stage, on the left side. The second stage consists in resection of the remaining part of the sympathetic cervical cord (respecting the inferior cervical ganglion) and the thoracic fibers of the vagus which escaped at the first operation. Local anesthesia or, if necessary, general anesthesia with ether is used. Intraspinal injections of procaine hydrochloride are contraindicated.

Paris Médical

61: 329-340 (Oct. 30) 1926

*Diagnosis of Dysenteric Arthritis. A. Besson and G. Ehringer.—p. 329.
Clinical Value of Sedimentation of Erythrocytes. S. Balachowsky.—p. 332.
Pulmonary Tuberculosis Associated with Syphilis. E. Liberopulo.—p. 339.

Agglutination Test for Diagnosis of Dysenteric Arthritis.—Inflammation of the knee and elbow joints occurred in one of Besson and Ehringer's patients immediately after disappearance of the intestinal phenomena of dysentery. There was a profuse exudate in the knee joints. A large number of polynuclear cells were present in the aspirated fluid, but neither on microscopic examination nor on culture were any bacilli found. Agglutination tests of the fluid proved positive for Shiga and Flexner bacilli, negative for Hiss and colon bacilli. The results of the test were the same in another patient with arthritis, who had had diarrhea two weeks before. The disease had been of a mild form; antidysenteric serum was not used. The agglutination test was negative for Shiga and Flexner bacilli in exudate withdrawn from a tuberculous knee in one case, from a syphilitic joint in two cases. It is probable that further research will establish the efficacy of the agglutination test in infectious arthritides from the gonococcus, meningococcus, etc.

Presse Médicale, Paris

34: 1361-1376 (Oct. 30) 1926

Evolution, Diagnosis and Treatment of Biliary Diseases. B. B. V. Lyon.—p. 1361.

34: 1377-1392 (Nov. 3) 1926

Pathogenesis and Treatment of Mongolian Idiocy. A. B. Marfan.—p. 1377.
Conception of Arterial Hypertension. A. Leclercq.—p. 1380.
*Pathogenesis of Syphilitic Headache. G. Buzoianu and S. Tovaru.—p. 1382.

Pathogenesis of Nocturnal Headache in Syphilis.—Buzoianu and Tovaru connect the evening headache in the secondary stage of syphilis with the diminished tonus of the vagosympathetic system, especially of the sympathetic. They report ten cases in which this coincidence, clinically evident, was confirmed by tests. They think that a decrease of potassium and sodium ions and the consequent reduction of the alkalinity of the blood and cerebrospinal fluid are responsible for the lowering of the sympathetic tonus. Since the reduction of ion content is most pronounced in the evening, it is then that the sympathetic tonus is lowest. Calcium was tried in six syphilitic patients with nocturnal headache. A dose of 4, 6 or 8 Gm. of calcium lactate was given daily for ten or fifteen days. The headache disappeared; the vegetative tonus became normal after three or four days. The calcium, in larger doses, was continued for a certain time. The usual antisyphilitic treatment should be given in combination with the calcium. The good results from potassium iodide in syphilitic headache are easily ascribable to the restoring of the vegetative tonus by the action of potassium.

Schweizerische medizinische Wochenschrift, Basel

56: 945-968 (Oct. 2) 1926

*Surgical Treatment of Nephritis. F. Suter.—p. 946.
*Serodiagnosis of Thyroid Disturbances. F. M. Groedel and G. Hubert.—p. 949.
Pneumonia Statistics. E. Jessen.—p. 951.
Treatment of Dislocation of Humerus. C. Kaufmann.—p. 955.
Vitamins and Tuberculosis. K. Stiner.—p. 959.

Surgical Treatment of Nephritis.—Suter reviews the indications for surgery in nephritis. Colon bacillus infections practically always heal spontaneously. Decapsulation and drainage are of great value in staphylococcus infections. He is skeptical with regard to the diagnosis of "nephritis dolorosa" or of idiopathic hemorrhage from the kidney. Small calculi of the kidney or ureter, constriction of the ureter or a perinephritis may be the cause. Decapsulation improves the condition in some of these patients. An acute glomerulonephritis that has resisted treatment for a month may respond

well to decapsulation. The latter is imperative in anuria in acute nephritis. A unilateral decapsulation is sufficient. He reports on two cases of acute nephritis occurring almost simultaneously in two brothers. The nephritis was diagnosed early in the older brother, but the physician ordered a milk diet. Under this management the boy developed a grave eclamptic form of uremia within a few days. Although the patient was almost in a dying condition before the decapsulation, he recovered. At this time his younger brother was brought for examination. A grave glomerulonephritis was found and "hunger and thirst" treatment instituted. This patient recovered completely without any eclamptic symptoms. Decapsulation was not required in his case.

Serodiagnosis of Thyroid Disturbances.—Groedel and Hubert believe that they can differentiate the type of goiter by the action of the patient's serum on preparations made from various types of goiters. They used the interfereometric method.

Policlinico, Rome

33: 1241-1274 (Sept. 6) 1926

Results of Arsphenamine Treatment. L. Philippaon.—p. 1241.
Treatment of Fracture of Clavicle. R. Rebizzi.—p. 1244.

33: 1277-1307 (Sept. 13) 1926

Recurring Scarlatiniform Erythema. G. Pecori.—p. 1277.
Cancer of Penis. C. Coruzzi.—p. 1285.

33: 517-564 (Oct. 1) 1926. Medical Section

*Agranulocytosis and Monocytosis as Sepsis. C. Gamna.—p. 517.
Terminal Cerebral Hemorrhages in Leukemia. F. Rocchi.—p. 541.
Roentgen-Ray Treatment of Polycythemia. G. Milani.—p. 547.
Enzyme Reaction in Syphilis. T. Lucherini.—p. 555.

Agranulocytosis and Monocytosis as Sepsis.—Gamna regards all the syndromes causing disappearance of granulocytes from the blood as well as monocytic tonsillitis as forms of sepsis.

Riforma Medica, Naples

42: 913-936 (Sept. 27) 1926

Pathogenesis and Treatment of Diabetes. B. Bisbini and C. Manzini.—p. 913.
*Periarterial Sympathectomy. G. Broglio.—p. 917.
Manual Pleuropneumolysis. D. Paternoster.—p. 918.
Damage from Mercuric Cyanide. E. Pittarelli.—p. 922.
Cancer of Duodenal Papilla. A. Ceconi.—p. 928.

Periarterial Sympathectomy.—Broglio reports a periarterial sympathectomy done on the obliterated femoral artery in a man with trophic ulcer and pains, which followed a bullet wound of the leg (fracture of tibia and tarsus). In spite of the previous obliteration of the artery, its denudation was followed by healing of the ulcer and cessation of the pains.

Anales de la Facultad de Medicina, Montevideo

11: 265-338 (May) 1926

*Pulmonary Tuberculosis in Children. L. Morquio.—p. 265. C'cn.
*Suprarenals and Traumatic Shock. H. Rosselló and D. Benatti.—p. 295.
*Hemorrhages and Banti's Disease. Valera Fuentes and P. Rubino.—p. 303.
Gallbladder Infection Confirmed by Biliary Drainage. J. Carrère.—p. 313.
Ulcer Perforation of Duodenum and Gallbladder. G. J. Devincenzi.—p. 327. Summarized when published elsewhere.

Pulmonary Tuberculosis in Children.—Morquio discusses exhaustively the different anatomic and pathologic aspects of tuberculosis in the adult and in the child. About one half of the children dying in hospitals exhibit tuberculous manifestations in the lungs and glands. The outstanding feature is the tracheobronchial gland enlargement. As the child grows, the aspect of the disease changes. In children from 8 to 14 years old, pleurisy assumes more importance and expectoration and hemoptysis make their appearance. Measles is the disease most apt to be followed by tuberculosis. Occasionally, this sequence is seen in several children in the same household. Asthma and tuberculosis often coexist in children. The history helps in the differential diagnosis. Bronchial dilatation may be caused by syphilis. Echinococcus lung disease may also mislead. This, however, causes hemorrhage in about 50 per cent of cases, while bleeding is far rarer in tuberculosis. The bacillus must be sought in the discharge from the throat, in the gastro-intestinal contents or feces. The tuberculin test proves very useful in infants under 2 or 3, but its value decreases afterward. The results vary also in children from rural and urban communities. Roentgenoscopy excels roentgenography. In Uruguay, typhoid must always be kept in mind. The diseases often coexist and one frequently predisposes to the other. The course of typhoid may be fatally complicated by tuberculous meningitis. Prevention is theoretically easy but actually is often very difficult. If the value of Calmette's vaccination is finally confirmed, tuberculosis may be controlled as effectively as smallpox.

Suprarenal Massage in the Prevention of Shock.—Rosselló and Benatti's experiments were made on dogs. Slight massage, just gentle rubbing, of one of the suprarenals (preferably the left, as being more accessible) is enough to charge the blood with epinephrine. The effect amounts to that of an injection of the hormone. The method might be used in low blood pressure cases due to hemorrhage at operation.

Hemorrhages as the Cause of Banti's Disease.—In a typical case of Banti's disease, Valera Fuentes and Rubino state that the usual treatments were given without effect for three years. Splenectomy was seriously considered. The patient also suffered from hemorrhoids. On the possibility that these might be the cause and not a result of the condition, they were removed after three preparatory blood transfusions. In a month the general improvement was remarkable, and two and a half years later the patient's health was perfect.

Prensa Médica Argentina, Buenos Aires

13: 381-416 (Sept. 30) 1926

*Cervical and Thoracic Sympathectomy. R. Hernández Ramirez.—p. 381.
Action of Phlorhizin on Lymph Glucose. O. Pico Estrada et al.—p. 390.
*Vulvar Myiasis from Cochliomyia Macellaria Larvae. D. Greenway and A. Marciauo.—p. 393.
Irradiation of Tumor Cells Grown in Vitro. A. H. Roffo.—p. 393.

Useful Points in Cervicothoracic Sympathectomy.—From more than forty dissections on the sympathetic system and six operations for epilepsy, Ramirez has gleaned the following practical facts: Anastomosis with the second cervical nerve is quite regular. One should operate under control of the eye and cut without pulling on the superior cervical and stellate ganglions. A hooked grooved director proves useful. General anesthesia (Ombredanne) did not cause trouble. The author has modified Jonnesco's method so as to be able to excise the superior cervical ganglion in the open. Illustrations show his technic.

Vulvar Myiasis by Cochliomyia Macellaria.—The patient complained of gnawing pains in the vulvar region, which treatment of various kinds had failed to relieve. On examination eight larvae of *Cochliomyia macellaria* were discovered.

Archiv für exp. Pathologie and Pharmak., Leipzig

116: 261-382 (Sept.) 1926

Mineral Deficiency of the Human Organism. F. Thielmann.—p. 261.
*Sulphur Poisoning and Energy Metabolism. E. Simonson and F. Richter.—p. 272.
Disinfection of Biliary Tract. L. Kauftheil and E. Neubauer.—p. 296.
Uric Acid in Human Sweat. K. Voit.—p. 321.
*Middle Altitudes and Hyperthyroidism. R. E. Mark.—p. 334.
*Effects of Acetylcholin. O. Voss.—p. 367.

Effect of Chronic Sulphur Poisoning on Energy Metabolism.—Simonson and Richter administered gradually increasing doses of a saturated alcoholic solution of sulphur to three experimental subjects. The total amount of sulphur given in each experiment was 60 mg. The toxic symptoms resembled those in hydrogen sulphide poisoning. Weakness, paleness, headache, dyspnea and disturbances of coordination were most prominent. There was an increase in the pulmonary ventilation, depending, they think, on inhibition of oxidation. The respiratory metabolism increased with increase in the dose. It was below normal when the same dose was given for several successive days or when administration of the sulphur was discontinued.

Effect of Middle Altitudes on Normal and Hyperthyroidized Dogs.—Mark studied the metabolism of normal dogs in Vienna and at the mountain resort Semmering. A diet insufficient in amount and restricted to carbohydrates caused a greater decrease in weight at Semmering than in Vienna. Three of the experimental animals developed tachycardia, lasting from five to seven days, with the change from the

altitude of Vienna (150 meters) to that of Semmering (1,040 meters). The manifestations of artificially induced hyperthyroidism differed according to the altitude. Decrease of weight was less in Semmering than in Vienna. Increase in the pulse frequency was absent in two of the animals and hyperglycemia in two others.

Changes in the Effect of Acetylcholin.—Voss studied the effect of acetylcholin on the surviving heart, blood vessels and nerves of the frog, and found that its reaction was determined by the electrolytes present. Constriction of vessels occurred when there was a surplus of calcium. A surplus of potassium provoked dilatation of the vessels. Sodium phosphate, barium, strontium and strophanthin acted similarly to calcium. Atropine checked both the dilating and constricting effect of acetylcholin. The intensity of the effect of acetylcholin and of epinephrine, but not that of cholin, depended on the hydrogen ion concentration of the solution.

Archiv für klinische Chirurgie, Berlin

141: 577-769 (Sept. 16) 1926

Hemolysis in Blood Transfusions. E. Cornils.—p. 577.
Suture or Ligation in Communicating Hematomas. W. Rieder.—p. 613.
Treatment of Fractures and Fracture Deformities. A. Schanz.—p. 628.
Open Reduction of Dislocation of Humerus. C. Gontermann.—p. 657.
*So-Called Periduodenitis. E. Seifert.—p. 663.
*Free Cartilage Transplantation. A. Mannheim and B. Zypkin.—p. 668.
*From Localized to Generalized Fibrous Osteitis. E. Bergmann.—p. 673.
*Spread of Extradural Effusions. P. M. Kowalewskij.—p. 681.
Drainage of the Ventricles of the Brain by Strips of Omentum. A. A. Kosyrew.—p. 691.
Polypi and Carcinoma of the Intestine. Reichel.—p. 702.
*Ruge and Philipp's Virulence Test. R. Bumm.—p. 718.
Heritability of Harelip and Cleft Palate. W. Birkenfeld.—p. 729.
*Chronic Multiple Diseases of Tendon Sheaths. F. Breuer.—p. 754.
Gastroplasty for Billroth I. R. Gartenmeister.—p. 765.

So-Called Periduodenitis.—Seifert has already pointed out that a considerable portion of the connective tissue formations classed in surgical literature under perigastritis, periduodenitis and pericholecystitis are of congenital, not inflammatory, origin. Microscopic studies reveal characteristic differences between acquired adhesions of the gallbladder and duodenal regions and the congenital membrane (a variant of the hepatogastric ligament). In the former the arrangement of the vessels is atypical, fat is absent and, if it has existed long, elastic fibers are abundant. The other is a thin connective tissue, cribriform and containing fat, like the omentum: elastic fibers are not conspicuous.

Free Autoplastic Cartilage Transplantation.—In fifty experiments on rabbits, covering periods of from two weeks to twelve months, Mannheim and Zypkin studied the regenerative capacity of free autografts of costal cartilage. They conclude that such transplants are suitable for plastic operations on soft parts and for covering skull defects. The cartilage retained its vitality better in the soft parts than in the skull, better in muscle than under the skin. The viability of the graft was increased by partial removal of the perichondrium.

From Localized to Generalized Fibrous Osteitis.—Bergmann reports the case of a girl, aged 21, who at 8 years of age sustained a pathologic fracture of the left femur. At 11 years excochleation was performed, followed by transplantation of bone from the tibia. For nine years there were neither clinical nor roentgenologic signs of any progress of the disease. Pains in the left hip and leg, which might be explained by the coxa vara, led to roentgenologic examination. Extensive fibrous osteitis with cystic degeneration in the head, neck, shaft and condyles was revealed. Systematic roentgenray exploration disclosed foci of the disease in nearly all parts of the skeleton. Skull, spine and clavicles were free. The local recurrence is a phenomenon that has not before been seen in Hildebrand's clinic.

Spread of Extradural Effusions.—Kowalewskij studied the direction and extent of extradural effusions, as governed by the adhesion of the dura to the skull. In childhood the dura is firmly adherent over large surfaces; between 20 and 50 years the areas of fixation are much smaller; after 50 they are again extensive. In experiments on cadavers, he found that melted fat injected epidurally into the anterior cranial fossa never passed the limits of this fossa. In the posterior cranial fossa it passed from the cerebellar fossa upward into the corresponding occipital fossa; thence over the upper limb of the internal cruciate eminence of the occipital bone, to the occipital fossa on the opposite side, and from this into the other cerebellar fossa. The influence of age on the spread of the mass was seen in all regions, but is especially noted in regard to the middle cranial fossa: here the spread of the injected mass was stopped, in the middle period of life, at the upper margin of the petrous bone, because of firm fixation of the dura at the superior petrosal groove. In children over 10, the mass sometimes passed beyond into the sigmoid sulcus, but was always stopped by the firm adherence of the dura along the occipitomastoid suture. Over 50, the mass got no farther than the tegmen tympani. The course taken by pus would be influenced by its peptic properties, but with it as well as with blood the part played by the type of dural fixation would be important.

Ruge and Philipp's Virulence Test in Surgery.—Bumm discusses Ruge and Philipp's method of testing the virulence of micro-organisms by their ability to survive and multiply in the patient's blood in vitro. The test is useful only in streptococcus or staphylococcus infections and must be applied early. Many of the sources of error, technical and interpretative, are avoidable with experience, but others remain, not yet understood. His own results have improved with time. In the case of surgically treated phlegmons and abscesses, he can foretell the course of the infection correctly in 90 per cent, if the test is made one day after operation; but if made before or directly following operation, it may yield 40 per cent of failures. In gynecology the method is useful in deciding the safety of removing a tumor with ulcerated and infected surface.

Chronic, Nonspecific Multiple Tendovaginitis.—Breuer describes a case classified as rheumatic tendovaginitis, in a man, aged 24, without rheumatism or syphilis in his history. In the course of four years he developed swellings along the course of various tendons of both hands and feet, a peculiar swelling of the left elbow which could be referred only to the joint capsule, and an effusion in the right knee. The swellings on the dorsum of the right foot were operated on. Two tendon sheath sacs were found, one the size of a small apple. Their walls were thickened, gray and glistening. They contained a yellow fluid, which was sterile. The tendons were intact. Microscopic pictures of the sac wall resembled those of the synovial membrane in chronic primary arthritis. In a somewhat similar case reported by Günther, under the name hygromatosis rheumatica, the bursae mucosae were involved, but the joints were free. Breuer proposes the name polysynovitis.

Archiv f. Schiffs- u. Tropen-Hygiene, etc., Leipzig

30: 355-628 (Sept. 13) 1926. Partial Index

A New Species of Trematoda. J. Asada.—p. 360.
Encystment of Dipylidium Caninum in the Intestine of a Cat. E. Brumpt.—p. 365.
Serologic Diagnosis of Schistosomum Spindalis. N. H. Fairley.—p. 372.
Specific Therapeusis in Clonorchis Infections. E. C. Faust and Y. Ke-fang.—p. 383.
Mercurochrome in the Study of Anthelmintics. M. C. Hall and J. E. Shillinger.—p. 391.
*Quantitative Determination of Hookworm Ova in Feces. S. L. Hung.—p. 399.
*Malaria and Ascarides. H. E. Inhelder.—p. 431.
Treatment of Bilharziasis. M. Khalil.—p. 451.
*Effect of Bile and Pancreatic Juice on Anthelmintics. R. Kudicke and W. Borchardt.—p. 467.
Bilharziasis Mansoni. P. H. J. Lampe.—p. 475.
Nomenclature in Helminthology. R. T. Leiper.—p. 484.
Worm Parasites in Middle China. E. G. Nauck and S. Yü.—p. 503.
*The Intestinal Wall in Anguilluliasis. A. J. F. Oudendal.—p. 510.
*Formation of Blood Cylinders in the Kidneys in Strongyloides Infection. W. Roth.—p. 521.
The Life Cycle of Strongyloides. J. H. Sandground.—p. 528.
Trichuris Infection. B. Schwartz.—p. 544.
Glycogen Content of Nematoda Larvae. J. Stepanow-Grigoriew and R. Hoeppli.—p. 577.
Filaria-Loa Infection. H. Ziemann.—p. 626.

Quantitative Determination of Ova of Hookworm in Stool.—Hung suspends a certain amount of feces in a concentrated solution of sodium chloride in a glass vessel. The ascending hookworm ova are attracted to three coverslips, which float

on the surface of the suspension. After ten minutes the eggs are counted, and the total number computed according to a simple formula.

Malaria and Ascarides.—Inhelder reports the case of a boy, aged 5, who suddenly developed the symptoms of meningitis. Tropical gametes and the large number of eosinophils in the blood suggested the presence of helminths, and the stool contained a great number of ova of *Trichocephalus* and *Ascaris*. Quinine reduced the fever, but the other symptoms persisted. The patient recovered the day after peroral administration of a suspension of calomel and santonin. The author obtained good results in two similar cases with the same medication.

Effect of Bile and Pancreatic Juice on the Action of Vermicidal Remedies.—Kudicke and Borchardt found that bile is a better solvent for hydrocarbon halides (such as tetrachlormethane) than is pancreatic juice or water. At the same time it decreases the action of the anthelmintic. Theoretically, the best vermicidal effect is obtained when the excretion of pancreatic juice is increased and that of bile inhibited.

Intestinal Wall in Anguilluliasis.—The intestinal sections in necropsies performed by Oudendal show that *Strongyloides intestinalis* invades the crypts of Lieberkühn and deposits in the fundus of a crypt one or several ova, which develop into larvae. These penetrate the wall of the crypt and appear in the intestinal lumen, where they cause desquamation of epithelial cells.

Formation of Blood Cylinders in Kidney of Rabbit in Strongyloides Infection.—Roth infected rabbits with *Strongyloides* and found that excretion of blood cylinders in the urine began from one to two hours after the beginning of the infection, reached a maximum after about four hours and continued for twenty-four hours or more. In most cases they were probably the result of glomerular hemorrhage.

Klinische Wochenschrift, Berlin

5: 1857-1904 (Oct. 1) 1926

*Low Blood Pressure. P. Martini and A. Pierach.—p. 1857.
*Variability of Hormone Action. H. Zondek and H. Ucko.—p. 1861.
Quinhydrone Method. E. Mislowitzer.—p. 1863.
Diabetic Children as Outpatients. R. Priesel and R. Wagner.—p. 1865.
*Bactericidal Action of Gastric Contents. W. Löwenberg.—p. 1868.
*Streptococcus Infection. S. Kwasniewski and N. Henning.—p. 1870.
Treatment of Obesity. M. Rosenberg and G. Wolf.—p. 1872.
Inhibition of Growth in Children. J. Rosenstern.—p. 1874.
*Ostia of Ureters and Contraction of Bladder. W. Israel.—p. 1878.
*Sympathetic in Spasmophilia. P. Reyher.—p. 1879.
*Inhalations of Oxygen. H. Simon.—p. 1880.
Ovarian Hormones. H. Wichern.—p. 1880.
Laryngeal Tuberculosis. A. Esch.—p. 1882.
Care of War Invalids. Martineck.—p. 1885.

Low Blood Pressure.—Martini and Pierach discuss the syndrome of hypotension. They found that its main feature is a lowering of the potential energy of endocrine organs and muscles not innervated by the vegetative system. Asthma is prevalent among such patients. The life expectancy seems to be better in these asthenics than in healthy subjects.

Variability of Hormone Action.—Zondek and Ucko found that insulin is inactivated when subjected to electrodialysis. Moreover, it is sufficient simply to introduce it into an electrodialysis apparatus after the potential of the membranes has been changed by previous passage of a current. They believe that a similar inactivation of hormones may occur in the body.

Bactericidal Action of Gastric Contents.—Löwenberg found that the stomach contents from healthy subjects possesses a distinct bactericidal action, even after neutralization of the hydrochloric acid. Some of the samples tested equaled a 0.5 per cent solution of phenol in germicidal power.

Streptococcus Infection.—Kwasniewski and Henning were unable to obtain infection of the gallbladder in experimental *Streptococcus hemolyticus* sepsis in rabbits. Intravenous injection of enterococci and of a viridans streptococcus was followed regularly by infection of the gallbladder. Enterococci are much more resistant to sodium taurocholate than are streptococci.

Ostium of Ureter and Contraction of Bladder.—Israel's experiments on dogs indicate that the ostia of the ureters are compressed and closed during contraction of the bladder.

Sympathetic in Spasmophilia.—Reyher found enlargement of the heart in twenty-six out of twenty-seven spasmophilic children. The enlargement is reversible. In such an infant he found, beside an enlarged heart, a degeneration of the sympathetic nerves. Both changes were identical with those that he had described in beriberi in infants.

Inhalations of Oxygen.—Simon found that short inhalations of oxygen lower the viscosity of the blood and the oxygen consumption of erythrocytes. The respiratory metabolism is lowered, the respiratory quotient rises. Changes in the erythrocyte count or in hemoglobin content were not found. This action is more pronounced in disease than in health, and persists for a considerable time after the inhalation. The inhalation of oxygen relieves many patients with heart disease.

Medizinische Klinik, Berlin

22: 1475-1512 (Sept. 24) 1926

*Protein Treatment in Infants. R. Fischl.—p. 1475.
*Roentgen-Ray Study of Peptic Ulcers. A. Bernstein.—p. 1477.
Paroxysmal Tachycardia in Children. W. Dressler and M. Löwy.—p. 1481.
Hypersensitiveness. I. W. Samson.—p. 1483.
Abdominal Wall After Nerve Lesions. A. Poniemunski.—p. 1487.
Sarcomas of Locomotion Apparatus. F. Plate.—p. 1489.
Influenza or Self-Activating Tuberculosis? A. Walder.—p. 1490.
Formation of New Gallbladder. J. Citron.—p. 1491.
Recurring Osteomyelitis of the Spine. G. Wiele.—p. 1492.
Paralysis of Peroneus After Lead Inhalation. W. Jülich.—p. 1493.
Blood Groups in Cancer. H. Hirschfeld and A. Hittmair.—p. 1494.
Epilepsy and Occupational Injury. E. Rubensohn.—p. 1498.
Roentgen-Ray Diagnosis. L. Freund.—p. 1499.
*Typhoid Epidemic in Hanover. E. Steinitz.—p. 1511.
Syphilis in Pregnancy. Nürnberger. Supplement.—pp. 121-146.

Protein Treatment in Infants.—Fischl experienced only failures in his early attempts to use human milk or egg albumin in injections. He had much better results with injections of serums from healthy animals, as used by Czerny. He begins with 0.5 cc. and injects daily, increasing the dose to 2 cc. If another course is advisable later, the serum from a different species is used. He was well satisfied with the results in primary atrophy of infants and in premature babies.

Roentgenologic Study as Basis for Diagnosis and Treatment of Peptic Ulcers.—Bernstein values roentgenoscopy more highly than roentgenography. Haudek's differential sign between an ulcer niche (a plus in the outline of the stomach) and a carcinomatous niche (a minus—a protrusion into the shadow) has proved valuable. A minus in a plus means cancer. A spasm near the pylorus speaks more for cancer than for ulcer. He also discusses minor signs, but emphasizes that the roentgen-ray diagnosis of ulcer-cancer is impossible in most cases.

Typhoid Epidemic in Hanover.—Steinitz publishes the first report on the recent outbreak of typhoid in Hanover. August 14, the bacteriologist reported an increased bacterial count (300 per cubic centimeter) in the water taken on August 11. The next day the number of bacilli was too great for counting. More chlorine was added to the water, but the exclusion of the suspected wells was not completed until August 22. There was an increase in febrile gastro-enteritis before the latter date. From September 5, the number of cases of typhoid reported rose rapidly to 220 a day, a total of nearly 2,000.

Mitteilungen a. d. Grenzgeb. der Med. und Chir., Jena

39: 297-414, 1926

Surgical Importance of Jackson's Membrane. A. Comolli.—p. 297.
Air Embolism. K. Walcher.—p. 314.
Experimental Studies of Bile. W. Gundermann.—p. 353.
Paralysis of Diaphragm in Treatment of Tuberculosis. O. Roith.—p. 377.
*Peritoneal Irrigation. S. Rosenak and P. Siwon.—p. 391.
Blood Group Specificity of Malignant Tumors. O. Hoche and P. Moritsch.—p. 409.

Excretion of Waste Products from the Blood into the Peritoneal Cavity.—Rosenak and Siwon irrigated the peritoneal cavities of nephrectomized dogs with various solutions. The velocity of the irrigation varied between 1 and 4 liters an hour, and the temperature was kept between 32 and 44 C. The irrigation caused a remarkable decrease of the residual

nitrogen in the blood and improved the uremic symptoms. The best results were obtained with a 5 per cent solution of dextrose. None of the animals developed peritonitis.

Münchener medizinische Wochenschrift, Munich

73: 1647-1686 (Oct. 1) 1926

Epidemic Encephalitis. Heinicke.—p. 1647.
Personality in Sequels of Encephalitis. E. Guttmann.—p. 1650.
*Lactic Acid in Cerebrospinal Fluid. R. Scheller.—p. 1652.
Disturbances of Sleep. F. Noltenius.—p. 1654.
Scoliosis of Apprentices. H. Richter.—p. 1655.
Medicolegal Obstetrics. M. Hofmeier.—p. 1656.
*Ear Pains from Mandibular Arthritis. F. Bruck.—p. 1657.
*Oxygen Inhalations in Seasickness. Weiss.—p. 1658.
*Puerperal Gas Infections. W. Lehmann.—p. 1659. C'cn.
Treatment of Cervical Tears. W. Kemper.—p. 1663.
International Regulations on Aviation. O. Rappold.—p. 1664.
Diseases of the Kidney. S. Kidney Stones. C. R. Schlayer.—p. 1664.
German Society for Industrial Hygiene.—p. 1667.
Humanistic Education and Physicians. O. Körner.—p. 1668.

Lactic Acid in Cerebrospinal Fluid.—Scheller found from 9 to 15 mg. of lactic acid per hundred cubic centimeters of normal cerebrospinal fluid. The level was identical with that in blood. The dextrose which disappears in cases of meningitis and tumor is converted into lactic acid.

Ear Pains from Mandibular Arthritis.—Bruck draws attention to the frequently overlooked cases of arthritis of the mandibular joint. The patients usually complain of earache and are mistakenly treated for that condition.

Oxygen Inhalations in Seasickness.—Weiss recommends oxygen inhalation in treatment of seasickness. The patients may inhale every hour for from three to five minutes.

Puerperal Gas Infections.—Lehmann does not answer the question why dissolution of the blood occurs in some cases, while the majority of the patients recover. The prognosis of infections localized in the endometrium is good in spite of considerable changes in the blood. Curettement is advisable here. Extirpation of the uterus is necessary with physometra. Absence of crepitation does not exclude the latter condition. The localization of gas gangrene in the myometrium or peritoneum, a gas bacillus lymphagitis or thrombophlebitis is usually fatal.

Strahlentherapie, Berlin

23: 385-576, 1926

Action of Rays on Traube's Cell. G. Politzer and F. Scheminzky.—p. 385.
*Biologic Action of Roentgen Rays. F. M. Groedel and E. Schneider.—p. 411.
Measurement of Dispersion in the Water Phantom. R. Glocker and E. Kaupp.—p. 447.
Roentgen-Ray Doses in Absolute Units. G. H. Schneider.—p. 463.
Temporary Roentgen-Ray Castration. H. Guthmann and O. Bott.—p. 488.
*Roentgenotherapy of Tumors of the Cranial Cavity and Spinal Canal. A. Béclère.—p. 503.
*Roentgenotherapy of Exophthalmic Goiter. J. Borak.—p. 519.
Roentgenotherapy of Mikulicz's Disease. J. Ziegler.—p. 528.
A New Irradiation Apparatus. H. Holfelder.—p. 532.
Ionization in Therapy. H. Picard.—p. 541.

Biologic Effect of Roentgen Rays.—Groedel and Schneider noted a biologic roentgen-ray effect, which varied with the hydrogen ion concentration of the medium, when irradiating paramecia after addition of electrolytes. There was no difference between hard and soft rays. Dry seeds were not sensitive to the rays, but during the hydration in the beginning of germination a bionegative action was observed, if the medium contained electrolytes. Food rich in vitamins was irradiated; guinea-pigs fed on it developed toxic symptoms, probably dependent on avitaminosis, although it was impossible to destroy vitamins completely by means of the rays.

Roentgenotherapy of Tumors of Cranial Cavity and Spinal Canal.—Béclère warns against the so-called prereaction in irradiation of tumors of the cranial cavity and spinal canal. It may occur as early as one-half hour after irradiation, is characterized by dilatation of the vessels, hyperemia, serous transudation and edematous swelling, and disappears after one or two days. These phenomena, occurring in a rigidly enclosed space such as the cranial cavity or spinal canal, may become dangerous to life. To guard against this danger, the irradiation should be begun with great caution and continued with a watchful eye on the patient's reactions. Moderate doses, frequently repeated, are preferable to large doses given at long intervals.

Roentgenotherapy in Exophthalmic Goiter.—In early acute cases Borak irradiates the entire thyroid and the region of the thymus with two to four Holzknecht units, depending on the severity of the condition, using a 4 mm. aluminum filter. This dose is repeated at intervals of four to eight days, followed by a rest of three to four weeks. Acute cases are usually more or less improved after one such treatment, but chronic cases do not show improvement until after two or three series of treatments. In the second and third treatment in each series the thyroid alone is irradiated, the surface being divided into zones. Each zone is treated separately, but indirectly the whole gland receives some irradiation. He gives only four series. An operation is suggested, if results are not seen four months after the beginning of the treatment. An average of 80 per cent of his cases improved in from one to four months, and about a third subsequently became free from symptoms.

Wiener klinische Wochenschrift, Vienna

39: 1127-1180 (Sept. 30) 1926

*Tonus of Bladder After Operations. R. Bachrach.—p. 1128.
Surgery of Lower Part of Ureter. P. Blatt.—p. 1130.
Congenital Cystic Kidney. V. Blum.—p. 1132.
*Hematuria, Prostatic Hypertrophy and Kidney Tumor. E. Brecher.—p. 1136.
Gumma of Kidney. E. Felber.—p. 1138.
Cystopyelitis from Pseudodiphtheria Bacilli. B. Frisch.—p. 1140.
Prostatectomy for Adenoma. W. Fritz.—p. 1141.
Acriflavine in Urology. K. Gagstatter.—p. 1143.
Carcinoma of Ureter. R. Glas.—p. 1145.
Incarcerated Hernia of the Bladder. K. Haslinger.—p. 1150.
Reexamination After Prostatectomy. T. Hryntschak and M. Sgalitzer.—p. 1152.
Nonspecific Ulcers After Tuberculosis of the Bladder. P. Knapp.—p. 1154.
*Microlithiasis. R. Lichtenstern.—p. 1156.
Pneumopyelography. E. Kornitzer.—p. 1157.
Function of Gonads. A. Lieben.—p. 1159.
*Dilatation of Upper Urinary Passages. F. Necker.—p. 1161.
Crossed Dystopia of Kidney. R. Paschkis.—p. 1165.
*Sudden Death in Dilatation of Urinary Tract. H. G. Pleschner.—p. 1167.
Retention of Urine. H. Rubritius.—p. 1168.
Urologic Diagnosis. O. Schwarz.—p. 1170.
*Roentgen-Ray Examination of Kidney and Bladder. Sgalitzer.—p. 1171.
Drugs in Urinary Infections. K. Sternbach.—p. 1175.
Gangrene of External Genital Organs. E. Teltscher.—p. 1177.
Gonococcus Infection of Kidneys. A. Zinner.—p. 1179.

Tonus of Bladder After Operations.—Bachrach observed retention of urine in five patients after removal of diverticula of the bladder. The retention was due to hypotonia of the detrusor in the first, to hypertonia of the sphincter with a stricture in the second, and to hypertrophy of the prostate in the third patient.

Hematuria, Prostate and Kidney Tumor.—Brecher emphasizes the importance of complete examination, even when hematuria seems to be explained by the presence of a hypertrophic prostate. In the three cases reported, there was tumor of the kidney in addition to enlarged prostate.

Microlithiasis.—Lichtenstern observed six patients with slight hematuria and pains in the lumbar region on one side. The pains increased after riding. Roentgen-ray examination did not reveal signs of calculus. Fine, indistinct shadows in the kidney region were noted in the case of two of the patients. Surgical intervention gave the diagnosis: incrustations of the kidney. In one case nephrectomy was necessary. In the others the incrustations could be removed. The microscopic sections showed minute concretions, originating in the lumen of the tubules and extending into the tissue. He suggests the name microliths for the calculi and microlithiasis for the condition.

Dilatation of Upper Urinary Passages.—From his observations Necker concludes that congenital malformations of the sacral region (spina bifida) account for many cases of dilatation of the ureters or the pelvis of the kidney.

Sudden Death in Dilatation of Urinary Tract.—Pleschner introduced a catheter to evacuate the dilated bladder of a 6 year old boy, who had been losing strength rapidly in the

last six weeks. The micturition had become difficult only in the last few days, while the urine contained a large amount of pus. The child died a few seconds after introduction of the catheter. Necropsy showed suppuration and dilatation of bladder, ureters and renal pelves, with little parenchyma left, and dilatation of the heart.

Roentgen Examination of Kidney and Bladder.—Sgalitzer demonstrates the value of lateral projection in roentgen diagnosis of diseases of kidney and bladder.

Zentralblat für Chirurgie, Leipzig

53: 2513-2576 (Oct. 2) 1926

Technic of Bone Suture. G. Magnus.—p. 2514.
Thoracic Measurements. Salzepin and Abarbanel.—p. 2516.
Subepidermal Carcinoma with Breast Carcinoma. H. Fischer.—p. 2519.
*Biologic Processes in Bone Transplants. J. Doljansky.—p. 2523.
Flexion Contracture of the Fingers. W. Sebening.—p. 2526.
Zinc Oxide Ointment on Extension Dressings. F. Kroll.—p. 2527.
Ideal Stomach Clamps. S. Spassokukozky.—p. 2528.

Biologic Processes in Bone Transplants.—Doljansky studied in roentgenograms the degeneration and regeneration of transplanted bone. The pictures were taken at intervals from forty-eight days to eighteen weeks after autoplastic transplantation of the diaphysis of the fibula to replace the lower two thirds of the femur in a boy, aged 10.

Omskiy Meditsinskiy Jurnal, Omsk

1: 3-95, 1926. Partial Index

*Rôle of Respiratory Epithelium in Postoperative Pneumonias. K. I. Chulovskiy.—p. 4.
Sedimentation of Erythrocytes in Pulmonary Tuberculosis. M. A. Plisetskiy.—p. 14.

Rôle of Respiratory Ciliated Epithelium in Postoperative Pneumonias.—In Chulovskiy's opinion, inhibited function of the ciliated epithelium of the respiratory tract is an important factor in postoperative pneumonia. He studied the action of various anesthetics on this tissue in frogs and rabbits. Morphine does not exert any effect; consequently, subcutaneous injections of this drug may be given without harm before operation. In local anesthesia, not only the anesthetic but the peritoneal reflex as well may inhibit the activity of the ciliated epithelium. Methyl-propyl-carbinol urethane readily induces postoperative lesions of the respiratory tract, since it paralyzes the ciliated epithelium and, besides, remains long in the organism. Caffeine is contraindicated as an adjuvant in cerebrospinal anesthesia because it impairs the motility of the epithelial cilia. General anesthesia does not influence the ciliated epithelium to a greater extent than local anesthesia. Disturbed function of the ciliated epithelium may be a factor not only in aspiration pneumonia but also in the embolic and hypostatic forms.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

70: 1175-1262 (Sept. 11) 1926

*Vaccine Treatment of Whooping Cough. A. H. Krijger.—p. 1176.
Accident Insurance and Deforming Arthritis. D. Brocx.—p. 1181.
Subretinal Ophthalmomyiasis. W. P. C. Zeeman.—p. 1192.
Tumors of the Temporal Lobe. L. v. d. Horst.—p. 1198.
Muscle Quality. J. H. O. Reys.—p. 1203.
A New Needle for Intravenous Injections. D. M. Levy.—p. 1207.
Subcutaneous Rupture of an Abscess of the Pleural Cavity. H. S. v. d. Lee.—p. 1208.
*Foreign Body in the Vagina. A. G. J. Hermans.—p. 1210.

Vaccine Treatment of Whooping Cough.—Krijger reviews the results of his treatment of fifty-two children. In 42 per cent the results were good and in 21 per cent satisfactory. The remaining cases did not show improvement. After the injection of the vaccine a local, general or focal reaction was observed. The effect of both early and late injections was the same. The best results were obtained in children who showed a severe local or general reaction. The treatment is especially applicable to infants.

Foreign Body in the Vagina.—Hermans reports the case of a woman, aged 32, who was treated by curettement after an incomplete induced abortion. The preliminary examination revealed a piece of oxtongue, 7 by 4.5 by 2 cm. in the vagina. "Varium et mutabile semper femina," reminds the author.

Acta Chirurgica Scandinavica, Stockholm

60: 489-583, 1926

*Treatment of Fractures of the Femur. R. Faltin.—p. 489.
*Periarterial Sympathectomy. E. Polák.—p. 541.
Alcohol Injection in Trigeminal Neuralgia. G. Bauer.—p. 573.

Treatment of Fractures of the Femur.—This article contains a study of the mechanical factors of traction as applied in treatment of a broken bone.

Periarterial Sympathectomy.—Polák cites six cases in support of the theory that the results of periarterial sympathectomy may be explained by a lesion of the centripetal nerves of the arterial wall. He holds that irritation of these nerves is probably responsible for the effects of the operation on the motor nerves of the vessels and of striped muscle; for the influence on the sensory fibers in the spinal cord, on the other hand, he believes that degeneration of the centripetal nerves is alone responsible. When the irritation caused by the operation has ceased, or the injured nerve branches have regenerated, the patient relapses, as was seen in his cases. The connection between sympathetic innervation and sensibility was studied in experimental sympathectomies on animals; Polák concludes that the alteration in sensibility is entirely independent of the conditions of blood circulation; he suggests as a possibility that it is a spinal cord reflex phenomenon. Extirpation of the abdominal sympathetic accelerated the progress of ergotamine gangrene in white rats. He believes that the circulatory changes which develop in ergotamine gangrene are of a paralytic character. These experiments indicate that sympathectomy does not have a place in the treatment of erythromelalgia and the second stage of Raynaud's disease.

Acta Obstet. et Gyn. Scandinavica, Helsingfors

5: 103-200, 1926

*Roentgen-Ray Treatment of Metrorrhagia. P. Freudenthal.—p. 103.
Tubal Pregnancy Recurring on the Same Side. E. Petersen.—p. 118.
*Stimulation of Labor. E. Jerlov.—p. 128.
Heterotopic Proliferations. C. Semb.—p. 147.

Roentgen-Ray Treatment of Metrorrhagia.—Freudenthal employed the roentgen ray in doses of from 80 to 100 Holzknecht units, with a 3 to 4 mm. aluminum filter, in the treatment of sixty-five cases of metrorrhagia before the menopause. From four to five series of treatments were given in each case, with a three weeks' interval between series. The observation time in these cases has been from one to six years. Permanent amenorrhea resulted in all but two of the cases. Forty-eight of the patients complained of climacteric symptoms; ten were free from them. These symptoms were usually not severe and disappeared in the course of two or three years. There was increase in weight in five patients, varying between 10 and 15 Kg., and loss of sexual desire in three. Depression, nervous irritability, loss of memory or noticeable atrophy of the genital organs did not occur.

Does the Stimulation to Labor Originate from the Fetus?—Jerlov studied the effect of male and female human blood and of fresh defibrinated blood obtained from the umbilical cord on the contractions of the surviving uterus of guinea-pigs. He found that blood from the umbilical cord had a greater effect on the surviving uterus than did other blood. He concludes that the stimulus to labor under normal conditions emanates from the fetus.

Hygiea, Stockholm

88: 737-784 (Oct. 15) 1926

*Prostatectomy. A. Troell.—p. 737.
*Genius Epidemicus in Stockholm. A. Magelssen.—p. 759.

Indications for, Technic and Results of Prostactectomy.—Troell's ninety-three cases of prostatectomy showed a mortality of 5 per cent. Repeated determinations of the residual nitrogen are necessary for judging the advisability of operation. Proteins in the food must be avoided during the last few days before operation. Good results were usually obtained if the value of the residual nitrogen did not exceed 40 mg. In cases with high residual nitrogen and severe infection of the urinary tract, he performs a preliminary cystostomy. In all cases he practices preliminary permanent

drainage of the bladder. The results were good in benign hypertrophy of the prostate, but in cancer a complete cure was seldom obtained.

Genius Epidemicus in Stockholm.—Magelssen noted an increase in cancer in Stockholm during the last sixty years. During the same period the meteorological curves show an increase in the average temperature. He asserts that lack of cold stimulus decreases the combustion and metabolism of cellular products, which become deposited in the organism and cause degenerative processes.

Norsk Magazin for Lægevidenskaben, Christiania

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Periarteritis Nodosa. F. Harbitz.—p. 854.
*Prognosis of Myxedema in Children. T. Skaar.—p. 863.

Prognosis of Myxedema in Children.—Skaar reviews fifty-six cases of myxedema in children, twenty-two developing after measles, and thirty-four of congenital origin. The ratio between boys and girls was 1:2. He did not find parallelism between the frequency of myxedema and that of endemic goiter in Norway. Of twenty-eight congenital cases, the parents were healthy in 60 per cent, the father alcoholic in 21 per cent and the mother goitrous in 11 per cent. Treatment with thyroid extract gave better results if begun at an early stage of the disease, but there was improvement even when the patients were from 10 to 15 years old at the beginning of the treatment. The body height could seldom be made to exceed 150 cm.

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Purulent Pericarditis. A. Westerborn.—p. 609.
*Albuminuria from Anesthesia. A. Bjure.—p. 623.
*Orthostatic Albuminuria and Varicocele. A. Kristenson.—p. 641.
*Spontaneous Reduction in Size of Kidney Calculus. E. Hasselström.—p. 703.
*Phlyctenular Conjunctivitis and Scrofulosis. H. Laurell.—p. 711.

Distribution of Bromine in Case of Fatal Sodium Bromide Poisoning.—Vilén presents the case of a man who had taken 100 Gm. of sodium bromide in less than two days. Qualitative determinations of bromine in the urine, blood, spinal fluid, stomach contents and serum of cutaneous blisters, made while the patient was alive, were all positive. After the necropsy, the bromine content of all the organs was determined quantitatively by means of Volhard's titration method, after destruction of organic substances with sodium hydroxide and sodium nitrate. The greatest amounts of bromide were found in the cerebral cortex, lungs and kidneys, in which organs it varied between 0.3 and 0.5 per cent. The gray matter of the cerebrum contained twice as much bromine as the white matter, the basal ganglions or the cerebellum.

Experimental Parthenogenesis and Ephebogenesis in Vertebrates.—Bosæus isolated ova from the uterus of *Rana temporaria* and *Bufo vulgaris*, and by irritating these ova with a needle he produced an artificial fertilization. In 1922 he was able to grow three parthenogenetic frogs, which passed through the metamorphosis, and were killed when about three months of age. In 1923 to 1925 he obtained several tadpoles that lived for two or three months. He found that ova fertilized with sperm that had been irradiated with roentgen rays usually developed morula and blastula in a normal manner. The gastrula stage was a critical one, and several ova perished. Only a few of them developed to the stage of neurula and larva. Abnormal formations were encountered, whether physical or chemical fertilizers or irradiated sperm were used.

Late Recurrence in Cancer of Breast.—Quensel reports the case of a woman, aged 64, who, fifteen years after an extirpation of the breast for cancer, had a recurrence at the site of operation. A second operation was done and revealed a tumor the size of a hazelnut in the subcutaneous fatty tissue. The histologic examination disclosed a simple carcinoma with foci of mammary tissue in the periphery of the growth. He concludes that mammary tissue was left over at the previous operation, from which the second cancer developed.

Meningeal Melanoma with Rigidity of Pupils.—Ehnmark and Jacobowsky report the case of a man, aged 61, who for several years had suffered from headache, which latterly was combined with vomiting and visual disturbances. The patient developed a somatic condition which gradually increased in severity, with reflex rigidity of the pupils. The history was negative for syphilis and alcoholism. About four months after the appearance of the first severe symptoms the man died. On examination of the tissue obtained at necropsy there was found a primary melanotic tumor formation of the pia mater of the brain and spinal cord. Only one similar case was discovered in the literature.

Albuminuria Due to Anesthesia.—In ten cases Bjure studied the effect of anesthesia on the oxygen and carbon dioxide content and on the hydrogen ion concentration of the blood. Albuminuria occurred in four cases that showed the lowest hydrogen ion concentration. There was a parallelism between acidosis and excretion of albumin. Albuminuria due to anesthesia resembles diabetic albuminuria, which also occurs with a relatively slight acidosis or alkalosis. It is probably caused by a kidney lesion, depending on the effect of the anesthetic on the kidney epithelium or by disturbances in the blood circulation in the kidney.

Pathogenesis of Orthostatic Albuminuria and Varicocele.—Of 836 patients examined by Kristenson, 26 per cent showed enlarged funicular veins, and 22 per cent had orthostatic albuminuria; 8 per cent presented both conditions. Albuminuria was more frequent in persons with varicocele than in those without. A higher frequency of varicocele was also found in patients with orthostatic albuminuria.

Spontaneous Reduction in Size of Kidney Calculus.—Hasselström presents the case of a sextipara, aged 40, who was operated on for a dermoid of the right ovary and later developed symptoms of hemorrhagic gastric ulcer. Roentgen-ray examination revealed a shadow in the pelvis of the right kidney resembling a large piece of coral. As the condition of the patient prohibited operation, she was sent home. Iron and arsenic were prescribed and she was told to take fluids freely. The residual nitrogen was 37.5 mg. Three weeks later the patient returned to the hospital, having experienced several severe attacks, accompanied by excretion of gravel and stones in the urine. Roentgen-ray examination showed that the corallin stone on the right side had almost disappeared. Only a few pea-sized masses remained. Another roentgen-ray examination made about two months later indicated that one of these masses remained unchanged, but one had shrunk to the size of a seed. He concludes that if conservative treatment fails to cause the disappearance of the stone, operation may be indicated.

Phlyctenular Conjunctivitis and Scrofulosis in Helminthiasis and Pediculosis: Pathogenesis of Scrofulosis.—Laurell's studies in five cases and the experience of others lead him to conclude that a tuberculous infection is not usually directly responsible for the phlyctenula, one of the most important objective symptoms of scrofulosis. The tuberculous infection probably is a coincidence in scrofulous children. He emphasizes the hypothesis that primary scrofulous symptoms—infection of mucous membranes and skin and occurrence of phlyctenules—are often caused by pediculi and oxyuris.